A CRITICAL ASSESSMENT OF POLLUTION CONTROL LAWS REGULATING THE DEVELOPMENT OF PETROLEUM RESOURCES IN THE UNITED KINGDOM AND NORWEGIAN SECTORS OF THE NORTH SEA

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I, Victor Fitzmaurice, hereby declare that the thesis which follows is wholly my own work.

PREFACE

On the night of 23 April 1977, a production well in the Norwegian Ekofisk Field blew out. After eight days of frantic activity, the well was brought under control--but few observers thought that the disappearance of daily news accounts of events on Platform Bravo signalled a return to the pre-existing state of affairs. The abstract issue of pollution control in respect of North Sea petroleum development had become concrete.

At the time of the Ekofisk blowout, this thesis was typed in final form. In consequence, it was not possible to investigate the influence of that incident on the development of North Sea pollution control law. At the time of this writing, it appears that such influence will be considerable indeed. The present law of North Sea pollution control has developed in response to crises: the *Torrey Canyon* incident, the Santa Barbara blowout, the *Allegro/Pacific Glory* collision. The events of 23 April 1977 and the days following will inspire a similar response.

A second omission occasioned by the need to curtail the length of this investigation concerns events resulting from the imminent sixth session of UNCLOS III.

The Ekofisk blowout and UNCLOS III are but two reminders that the law of the sea is subject to daily influences which shape its evolution to a greater or lesser extent, but at an accelerating rate. It is hoped that this thesis will assist the reader to understand these changes.

V.F.

Edinburgh, 13 May 1977

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ABBREVIATIONS

Abbreviation	Full Name
ACOPS	Advisory Committee on Oil Pollution of the Sea
Bbls	Barrels
BOP	Blowout Preventer
CCMS	Committee on the Challenges of Modern Society (NATO)
Cmd., Cmnd.	Command Paper
CRISTAL	Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution
DAFS	Department of Agriculture and Fisheries for Scotland
DOE	Department of the Environment (U.K.)
DOT	Department of Trade (U.K.)
DWT	Dead Weight Tonnage
E and P Forum	Oil Industry International Exploration and Production Forum
EEC	European Economic Community
EEZ	Exclusive Economic Zone
FAO	Food and Agriculture Organisation
GCBS	General Council of British Shipping
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GIPME	Global Investigation of Pollution in the Marine Environment
GRT	Gross Registered Tonnage
HMG	Her Majesty's Government
HMSO	Her Majesty's Stationery Office
IAEA	International Atomic Energy Agency
ICAO	International Civil Aviation Organisation
ICES	International Council for the Exploration of the Sea

Abbreviation	Full Name
ICG	International Co-ordination Group
ICJ	International Court of Justice
ICNAF	International Commission for Northwest Atlantic Fisheries
ICS	International Chamber of Shipping
ICSU	International Council of Scientific Unions
IDOE	International Decade of Ocean Exploration
IGOSS	Integrated Global Ocean Station System
ILC	International Law Commission
ILO	International Labour Organization
IMCO	Intergovernmental Maritime Consultative Organisation
IMF	International Monetary Fund
IOC	Intergovernmental Oceanographic Commission
ISNT	Informal Single Negotiating Text
IWGMP	Intergovernmental Working Group on Marine Pollution
LEPOR	Long-term and Expanded Programme of Oceanic Exploration and Research
LNG	Liquefied Natural Gas
LOT	Load on Top
MAFF	Ministry of Agriculture, Fisheries and Food (U.K.)
MD	Maritime Directorate (Norway)
ME	Ministry of Environment (Norway)
MEPC	Marine Environment Protection Committee
MIT	Massachusetts Institute of Technology
MSC	Maritime Safety Committee
NATO	North Atlantic Treaty Organisation
NEAFC	North-east Atlantic Fisheries Commission

Abbreviation	Full Name
NGO	Non-governmental Organisation
NM^3	Normal Cubic Metres
OCIMF	Oil Companies International Marine Forum
OCS	Outer Continental Shelf
OECD	Organisation for Economic Cooperation and Development
OPOL	Offshore Pollution Liability Agreement
OTA	Office of Technology Assessment
PCIJ	Permanent Court of International Justice
PD	Petroleum Directorate (Norway)
PPM	Parts Per Million
RSNT*	Revised Single Negotiating Text
SBM	Single-point Mooring Buoy
SCOPE	Scientific Committee on the Problems of the Environment
SCOR	Scientific Committee on Oceanic Research
SDR	Special Drawing Right
SOLAS	Safety of Life at Sea
SPCA	State Pollution Control Authority (Norway)
TOVALOP	Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution
UKOOA	United Kingdom Offshore Operators Association
UNCHE	United Nations Conference on the Human Environment
UNCLOS III	Third United Nations Conference on the Law of the Sea
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNITAR	United Nations Institute for Training and Research

Abbreviation	Full Name
USCEQ	United States Council on Environmental Quality
WMO	World Meteorological Organisation

CHAPTER ONE

INTRODUCTION

The ocean both links and divides mankind. It is a highway in peace and a moat in war. Until recently, oceanic vastness was incomprehensible: Grotius was undoubtedly reflecting the popular view of the seventeenth century as well as more recent times when he described the ocean as a body of such magnitude that it could be "neither seized nor enclosed; nay, which rather possesses the earth than is by it possessed."[1] Highway or moat, there was room for all. This is no longer true. Man's increasing numbers and advancing technology have provided both motive and means for exploiting the sea. The hope that mankind will benefit from oceanic resource development is tempered by doubts that this will be so: how should the increasing conflicts over ocean use be resolved? The ocean continues to link and divide mankind.

The North Sea is a microcosm of the global marine environment. Moreover, petroleum development in the North Sea is a forerunner of similar activity in areas from Alaska to Vietnam. Analysis of the control of marine pollution resulting from offshore petroleum development in the North Sea provides some indication of the nature of problems which will arise at an increasing rate in other oceans.

The primary objective of this thesis is to suggest an effective legal regime to control marine pollution from the development of petroleum in the U.K. and Norwegian sectors of the North Sea. The proposed model legal regime is intended to provide insights into

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1. Grotius, H., *Mare Liberum* (1609). This work was Chapter 12 of *De Jure Praedae*, which was not published until 1868.

this aspect of offshore petroleum development which will be useful in other marine areas as well.[2] This objective is based on an investigation of the causes and effects of North Sea marine pollution and the nature of the present legal regime.

A. Causes and Effects

The causes and effects of marine pollution are considered in Chapter Two. The analysis is primarily concerned with sea-based sources of environmental damage; it considers vessels, petroleum transfer and refining, and offshore petroleum development. The role of land-based marine pollution sources is discussed in connection with the capability of the North Sea to assimilate all materials which may enter it as a result of human activity.

This thesis uses the United Nations definition of "marine pollution":

> "The introduction by man, directly or indirectly, of substances or energy into the marine environment resulting in such deleterious effects as harm to living resources, hazards to health, hindrance to marine activities, including fishing, impairment of quality for use of sea-water and reduction of amenities."[3]

This broad definition encompasses conflicts with other users of the North Sea, such as obstructions to navigation caused by installation clusters or damage to fishing nets caused by oil-related debris on the seabed. As the North Sea is intensively used for a number of marine activities, potential "pollution" in the sense of user

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2. A leading industry journal observed that North Sea experience is likely to be of great value in development of the petroleum resources in the Gulf of Alaska. *Noroil* (November 1975), at p. 38.

3. U.N. Doc. 3/5003, 1971, p. 5.

conflict is serious indeed.[4] This thesis is concerned with the control of any pollution resulting from the development and transportation of North Sea petroleum. Thus, the disposal of drilling mud from an offshore installation or the consequences of a tanker-mobile platform collision are both pertinent. It has been necessary, because of limitations of time and space, to exclude much of the law of vessel safety. It is also regrettable that it has not been possible to discuss in detail the subject of personnel qualifications and training, for it is well known that many maritime accidents are caused by human error rather than equipment failure.[5] It is hoped that references cited herin will enable the interested reader to pursue these issues.

B. The Legal Regime of Marine Pollution Control

This thesis investigates the legal control of marine pollution in the U.K. and Norwegian sectors of the North Sea.[6] It is recognised that considering less than the total national law relevant

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4. The competing uses and interests in the North Sea are described in detail in Sibthorp, M. (ed.), *The North Sea: Challenge and Opportunity*, A Report of a Study Group of the David Davies Memorial Institute of International Studies, published by Europa Publications, London (1975), at pp. 67-84.

5. For example, it has been reported that "over 50 per cent. of the collision or grounding type of tanker casualties can be attributed to human error." Congress of the United States, Office of Technology Assessment, *Oil Transportation by Tankers: An Analysis of Marine Pollution and Safety Measures*, Washington, D.C. (1975), at p. 57.

6. For the purposes of this thesis, the southern and northern limits of the North Sea are considered to be 51° 48' 18" N. and 61° 44' 12" N., the present limits of the U.K.-Continent continental shelf boundary.

to North Sea pollution control is artificial because the sea is itself indivisible. However, it was necessary to limit the scope of this investigation in order to permit a thorough analysis of both municipal and international law. It was decided that concentrating on the two principal petroleum producing States in the North Sea would permit a thorough investigation within a manageable scope.

The U.K. and Norway have many common interests; in addition to their status as major oil producing nations, they are both coastal States and each is a substantial merchant shipping nation. Thus, each Government has an interest in petroleum production, coastal protection, and freedom of navigation. Despite these shared interests, the U.K. and Norway have adopted different approaches to offshore oil and gas development because their needs are different. The U.K. needs more oil because her larger population consumes far more petroleum than is the case in Norway and, unlike her Scandinavian neighbour, her hydroelectric generating capacity is small. Moreover, the British economy has come to depend upon massive foreign borrowing to survive. Much of this borrowing is secured by projected revenues from North Sea oil.[7] U.K. policy therefore emphasises production.

Norway, on the other hand, has one of the world's strongest economies.[8] Norwegian policy tends to concentrate on orderly

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7. Neil, A., "North Sea Oil: Make or Break?" Survey, *The Economist*, 26 July - 1 August, 1975, at p. 1. The Department of Energy in *United Kingdom Offshore Oil and Gas Policy*, Cmnd. 5696 (1974), omits mention of these considerations.

8. Leonard, R., "Norway: The Next Richest Nation," Survey, *The Economist*, 15-21 November 1975, p. 3 *et seq.*

development of offshore resources and minimisation of social disruptions which could accompany rapid expansion of petroleum production. Furthermore, prevailing meteorological conditions suggest that in the event of a massive oil spill in existing[9] North Sea oil fields, Norway would be more likely to suffer damage than would Britain. This possibility is clearly a consideration in Norwegian oil development policy.

How are these divergent policies manifested in law and how effective is such law in environmental protection? Answering this question is a central concern of those chapters which analyse the constituents of the present regime of North Sea pollution control. Chapters Three and Four consider the role of international law in the prevention of pollution and liability for pollution damage. Industry compensation schemes are briefly discussed in a chapter placed after the discussion of the international law of liability. Industry agreements are both international and governed by rules of law; it is of interest to compare them with the analogous public international law compensation schemes.

Separate chapters are allocated to the U.K. law of pollution prevention, the U.K. law of liability for pollution damage, the Norwegian law of pollution prevention, and the Norwegian law of civil liability. Municipal law is of great importance in the North Sea, not only because it implements international conventional

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9. But Scotland might become a victim of pollution from a possible new field only twenty miles off the Scottish coast. See Banal, R., "Mesa Strike Stimulates Interest in Moray Firth," *The Scotsman*, "Oil Register," 25 January 1977, p. iii.

law, but also because many petroleum development activities are subject to jurisdiction which proceeds from coastal State sovereignty or sovereign rights.

The suggested model legal regime in Chapter Ten attempts to coordinate laws and reconcile values to the extent realistically possible. Coordination of national and international law concentrates on establishing a system of uniform standards and enforcement for the United Kingdom and Norwegian areas initially, and then expands these recommendations to include the entire North Sea. An interdisciplinary approach is employed to weigh carefully multiple factors--economic, technological, sociological and political--in order to provide a solid foundation upon which to base the suggested model legal regime.

CHAPTER TWO

CAUSES AND EFFECTS OF MARINE POLLUTION

"Pollution" as defined in this thesis includes the introduction of substances into the sea which cause environmental injury and/or which diminish other users' enjoyment of the sea.[1] Pollution contemplates the introduction of harmful agents into the sea and is therefore concerned with the nature of those agents, the pathways they use to enter the ocean, and the effects thus wrought on the marine environment. This process is imperfectly understood despite extensive research and voluminous writings;[2] the summary contained in this chapter is included to refresh the reader's memory and to present some of the more recent findings relevant to the North Sea rather than as a contribution to scientific inquiry.[3]

A. Causes of Marine Pollution

1. Land-based sources of marine pollution

Most marine pollution is caused by agents which are transferred from land to sea by rivers or winds.[4] The imperfect data available

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1. See Chapter One, p. 2.

2. See, for example, Moulder, D. and Varley, A., *A Bibliography on Marine and Estuarine Oil Pollution*, Supplement 1, Marine Pollution Information Centre, Marine Biological Association of the United Kingdom, Plymouth (June, 1975). This bibliography contains 1,200 references and complements an earlier work which contained nearly 1,100--yet it considers only marine *oil* pollution.

3. It has also been suggested by Viktor Sebek, Secretary of the Advisory Committee on Oil Pollution of the Sea, that as legal protection is based upon scientific investigation, lawyers and legislators would do well to acquire at least a minimal understanding of the scientific problems involved. (Conversation with the author, June, 1976.)

4. Hardy, M., "Offshore Development and Marine Pollution," 1 *Ocean Development and International Law* 239-273 (1973-74), at 242.

make an accurate estimate of how much land-based sources contribute to the total problem of marine pollution impossible, but there is general agreement that the figure must be well above fifty per cent., perhaps as much as seventy per cent. There are literally hundreds of pollutants,[5] ranging from ultra-hazardous radioactive wastes to inert marine dredge spoils; thermal and seismic discharges are included among the pollutive activities.[6] The North Sea is characterized by strong flushing action, and, in consequence, its capacity to assimilate such agents and to accommodate such activities is considerably enhanced. It is not, however, unlimited, and account must be taken of possible synergistic[7] as well as cumulative effects. It is clear, therefore, that control of North Sea pollution must consider harmful inputs from all sources. Thus, although this thesis

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5. The Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) has prepared a list of several hundred substances in connection with its work on ocean dumping. See Chapter Three, p. 107.

6. A GESAMP list of major marine pollutants includes: radioactive materials, oil, sewage, pesticides, inorganic wastes, petrochemicals and organic chemicals, organic wastes, military wastes, heat, detergents, solid objects, and dredging spoil and inert wastes. Report of the Second Session, March 1970 (GESAMP II/11, June 20, 1970) Annex V: "Review of Harmful Chemical Substances," p. 16.

7. The "synergistic effect" by which chemical interactions may cause substances to become more harmful than the sum of their separate characteristics may also be manifested indirectly. Barbara Ward has observed that oil spills in the Arctic are such an example. Should oil cover the surface of ice floes, sunlight would be absorbed at an unusual rate, possibly causing increased melting and a consequent increase in the sea level, to the substantial detriment of coastal communities. See the Introduction to Hallman, R., *Towards an Environmentally Sound Law of the Sea*, A Report of the International Institute for Environment and Development, London (1974), at p. 7.

will not consider the legal control of land-based pollution sources, it will outline the transfer of harmful agents from the land to the North Sea insofar as that process is understood.

a) rivers and outfall pipes

Rivers and outfall pipes carry society's wastes into the sea. Rivers are a particularly significant pathway for agents which may be washed off the land; it has been estimated that about fifty per cent. of the pesticides and heavy metals which enter the sea have drained from agricultural land into watercourses.[8] It is generally accepted that the Rhine is the single greatest source of pollutants introduced into the North Sea.[9] Rivers are particularly prone to become overloaded in their capacity to assimilate the substances dumped into them because they may pass through several countries and regulation may therefore depend upon inter-governmental agreement.[10]

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8. Kelbie, D. "Law and Pollution in Scotland," 18 *Journal of the Law Society of Scotland* 174-179, (1973), at p. 174. It is estimated that seventy-five per cent. of all DDT ever used is still on land and waiting to be washed off. *Ibid.*

9. A significant amount of oil is no doubt also delivered to the sea in Rhine effluent. One writer has noted that an estimated 10 million tons of oily bilge water per year is discharged into the Rhine from river craft. Tinker, J., "Europe's Majestic Sewer," 56 *New Scientist* 194-199 (1972), at p. 199. See also *The Times*, 12 April 1972, p. VII.

10. Control of pollution in the Rhine is fraught with such problems. In 1963, France, West Germany, The Netherlands, Switzerland and Luxembourg established the International Commission for the Protection of the Rhine. Since that date the most noticeable change which has occurred is the steady decline in the quality of Rhine water. A particular problem is the discharge of sodium chloride from Alsace mines into the river: cessation or elimination of this practice would entail economic consequences which the French are unwilling to bear alone, and the apportionment

Municipal sewage is frequently discharged from outfall pipes, and though the quantities of effluent entering the sea may be comparatively small individually, cumulatively they become significant. Moreover, even as rivers may be described as "open sewers," so outfall pipes might well be termed "closed rivers," for in addition to human wastes, such channels also convey a considerable volume of industrial wastes--including oil[11]--to the sea.

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of which is a subject of disagreement among the riparian States. *The Times*, 3 May 1976, p. 4.

"On 3.12.1976 France, Germany (F.R.), Luxembourg, Netherlands, Switzerland and the European Communities signed a Convention for the Protection of the Rhine against Chemical Pollution and an Additional Agreement to the 1963 Agreement concerning the International Commission for the Protection of the Rhine against Pollution. The latter provides for the EC to take part in the work of the Commission. At the same time the five States also signed a convention on the protection of the Rhine from pollution caused by salt." *Bulletin of Legal Developments*, 17 December 1976, p. 243, citing *Guardian* 4 December 1976, p. 3.

Another writer has pointed out that rivers enable (some might say "require") landlocked States to discharge wastes into the sea. At UNCLOS III, Iraq "suggested that a more appropriate rendering of the terms 'marine pollution' and 'marine environment' would be 'water pollution' and 'water environment' since so many pollutants are brought to the sea by rivers." Birnie, P., "The Basic Obligation to Protect the Marine Environment," in Stein, R. (ed.), *Critical Environmental Issues on the Law of the Sea*, a Report of the International Institute of Environment and Development, London (1975), pp. 1-8, at p. 2.

11. One writer has suggested that "the largest single source of oil to the ocean may come from such sources as old crank case oil from automobiles" dumped into municipal sewers. "Although much of the oil is removed by sewage treatment, that which is not passes through sewage treatment plants virtually unmodified. For example, we are reasonably certain that the largest single source of oil pollution in Narragansett Bay is not spills from tankers, oil storage facilities, or similar obvious sources, but our sewage treatment plants." Knauss, J., "Ocean Pollution: Status and Prognostication," in Gamble, J. and Pontecorvo, G. (eds.), *Law of the Sea: The Emerging Regime of the Oceans*, Ballinger Publishing, Cambridge, Mass. (1973),

b) atmospheric pollution

Pollutants such as sulphur dioxide[12] and pesticides may be transported by winds for great distances before falling to earth or sea. The atmospheric pathway is particularly efficient for transferring hydrocarbons from land to sea in the form of gases and particulate matter resulting from petroleum burning.[13] This is one of the contributors to marine pollution about which we have the most to learn; it is, therefore, not possible to estimate with confidence hydrocarbons entering the North Sea by atmospheric transfer.[14]

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pp. 313-332, at p. 323. Mr. Knauss cites Farrington, J. and Quinn, J., "Petroleum Hydrocarbons and Fatty Acids in Waste Water Effluents," 43 *Journal of the Water Pollution Control Federation* 704-712 (1973) in connection with the Narragansett Bay findings.

12. Salmon and trout stocks in the rivers and lakes of southern Norway are being depleted by acid rain caused by air pollution in Britain, according to a report from the Norwegian Ministry of Environment. Sweden has issued a similar report. *The Guardian*, 13 October 1975, p. 15. See also, Norwegian Royal Ministry of Foreign Affairs, *Norway's National Report to the United Nations Conference on the Human Environment* (1972), p. 40. Ten Northwestern European States under the auspices of the Organisation for Economic Co-operation and Development (OECD) are monitoring atmospheric sulphur dioxide. Sibthorp, M. (ed.), *The North Sea: Challenge and Opportunity*, David Davies Memorial Institute of International Studies, Europa Publications, London (1975), p. 39.

13. The U.S. National Academy of Sciences estimates that about two-thirds of the hydrocarbons entering the atmosphere are from transportation. Fuel consumption from fixed locations, industry, and solvent and gasoline evaporation account for the remainder. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), p. 10. See also, National Academy of Sciences, *Assessing Potential Ocean Pollutants*, Washington, D.C. (1975), p. 162.

14. A recent Report concluded that "the atmosphere as a pathway for the entry of metals *[*into the North Sea*]* has been shown to be of importance for at least the two elements iron and lead, and, possibly for a third, zinc." Nothing was stated concerning

c) ocean dumping

Ocean dumping involves the use of vessels or aircraft to transport wastes from land to a disposal site at sea. This method of disposal is likely to be selected when it is cheaper than terrestrial alternatives, or is thought to be less risky. In the former category is the huge volume of sewage sludge and rubbish produced by coastal megalopolises;[15] in the second category, the most striking example

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hydrocarbons. International Council for the Exploration of the Sea (ICES), *Cooperative Research Report No. 39* (1974), p. 25. Various estimates of atmospheric transfer of hydrocarbons to global seas have been made; one scientist estimates that "over 95 per cent. of the petroleum flux into the marine environment is airborne." Van Grieken, R., "Ocean-Atmosphere Interactions and Oil Pollution," in Sierra Club, *Ocean Resources and the Ocean Environment*, San Francisco (1974), pp. 9-14.

However, it is submitted that such findings should be treated with caution, particularly when they are used as a basis for deducing that the North Sea is representative of the world. This may be the case: Knauss has observed that because of atmospheric mixing, airborne marine pollutants are likely to be uniformly distributed around the world. Knauss, J., *op. cit.* in footnote 11, at p. 326. On the other hand, Mr. Hardy suggests that only certain areas may be affected. Hardy, M., *op. cit.* in footnote 4, at pp. 242-243. The most prudent course would appear to be acceptance of Knauss's comment that "our present level of understanding is best characterized by saying that we believe we have some estimate of the magnitude of the problem," and to consider this imperfect knowledge in any assessment of North Sea pollution. Knauss, J., *op. cit.* in footnote 11, at p. 318.

15. One authority predicts that "in the year 2000 half of the estimated 312-million population of the U.S. will live on the 5 per cent. of the land areas in three coastal urban belts: the megalopolises of the Atlantic, the Pacific and the Great Lakes. Along with the people will come an intensification of competing demands for the limited resources of the narrow, fragile coastal zone." Wenk, E., "The Physical Resources of the Ocean," in *The Ocean*, a Scientific American Book (1969). An extensive review of U.S. ocean dumping has produced the conclusion that localised damage could result (as in the New York Bight) from dredge spoil and sewage sludge. National Academy of Sciences, *Assessing Potential Ocean Pollutants*, Washington, D.C. (1975), pp. 228-290.

is nuclear material.[16] The volume of material dumped at sea is increasing at a great rate, as is the variety of substances disposed of.[17] Substances disposed of in the North Sea appear to be

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The trend to urban conglomerations in general and to coastal concentrations of population in particular is a global one, and will increase the volumes of land-based substances entering the North Sea as is the case in the U.S. ICES has detailed information on North Sea sewage inputs compiled in their Report No. 39 (*op. cit.* in footnote 14, at p. 15 *et seq.*), and that organisation is but one of several groups continuing to investigate the problem. See, e.g., World Health Organisation, Regional Office for Europe, "Long-Term Programme in Environmental Pollution Control in Europe: The Hazards to Health and Ecological Effects of Pollution of the North Sea," *Report on a Working Group*, Bilthoven (1972).

16. The proliferation of nuclear power stations is causing concern about a number of aspects of their operation, including waste disposal. A recent U.K. Report has suggested that present techniques of radioactive waste storage are inadequate in view of the fact that such materials remain dangerous for thousands of years and, because of this and other dangers, it was concluded that the present U.K. nuclear power programme exposes the public to unjustifiable risks. Royal Commission on Environmental Pollution, *Nuclear Power and the Environment*, Cmnd. 6618 (1976). This Report coincides with increasing accounts of leakage from drums of radioactive waste dumped in the last twenty years. *The Times*, 22 May 1976, p. 5; *International Herald Tribune*, 22-23 May 1976, p. 3. Obsolete military equipment is another example of dangerous materials disposed of at sea because the risks of storing them on land are judged to be greater than ocean dumping. See, e.g., Brown, E.D., "International Law and Marine Pollution: Radioactive Waste and Other Hazardous Substances," 11 *Natural Resources Journal* 221-255 (1971). Professor Brown includes in an Appendix, "The Ocean Dumping of Nerve Gas: A Case Study of 'Operation Chase.'"

17. It has been estimated that the volume of industrial waste reaching the oceans will increase sevenfold in the decade of the seventies. Wenk, E., *op. cit.* in footnote 15, at p. 90. A great increase in ocean dumping will result as pressures mount for clean rivers, lakes, and land storage. See, e.g., a recent account in *The Times* of a U.K. Government Report: "Every year about 2,700,000 tons of colliery waste is tipped on a six-mile stretch of coast" in England. It is discharged by outfall pipes which end on the beach itself, thus staining that area. In considering alternative methods of waste disposal, a Department of the Environment Report suggested ocean dumping as the most

limited to industrial wastes of comparatively low toxicity, sewage sludge, and dredge spoils.[18] Most of the North Sea littoral States are now parties to one or more conventions, the terms of which regulate this practice.[19] It should be noted, however, that the available evidence indicates that the disposal of oil-related debris in the

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efficient and economic solution. *The Times*, 31 October 1975, p. 2. The increase in the variety of materials dumped may be even more serious. Although GESAMP are attempting to assess the effects of materials on the marine environment so that a basis exists for deciding the conditions under which dumping may occur, it may well be that new and chemically complex products are being produced faster than careful assessment (especially of the long-term effects) can occur. See, e.g., Norwegian Ministry of Environment, *Parliamentary Report No. 44*, (1975-76), "Pollution Control Measures," para. 1.1; the description of an "early warning scheme" designed to "prevent the discharge of waste substances that later turn out to have undesirable physical, chemical and biological properties," *The Times*, 10 April 1975, p. 2. The National Academy of Sciences of the U.S. has also concluded that "dumped material is often poorly characterized chemically," National Academy of Sciences, *Assessing Potential Ocean Pollutants*, Washington, D.C. (1975), at p. 5.

18. The ICES Report (*op. cit.* in footnote 14, at p. 25) concluded that marine dumping activities in the North Sea "were, however, shown to be of relatively minor importance in terms of total pollutant inputs and to be confined to minerals such as colliery wastes or harbour dredging with some dumping of chemical waste, primarily of waste acid from the production of titanium dioxide. The only other major waste which is dumped is sewage sludge." Replies to the ICES questionnaire relating to dumping in the North Sea indicate that, as of mid 1972, Norway reported no dumping and the U.K. reported some ocean disposal (*op. cit.* in footnote 14, at pp. 23-24 and Table 4, at pp. 86-88). Wastes licensed by the U.K. Ministry of Agriculture, Fisheries and Food (excluding licences issued by the Department of Agriculture and Fisheries for Scotland) are tabulated in Table 7 in a paper presented by P. Wood at the Conference on Exploitation of the North Sea: Greenwich Forum, 23-25 April 1975, at p. 34.

19. See the discussions of the Oslo Convention (p. 205), the London Convention (p. 209), the U.K. Dumping at Sea Act 1974 (p. 382), and the Norwegian "Regulations on dumping of substances which may have harmful effects on marine life and human health" (p. 485). Because of the economics of transportation, it is unlikely that States not bordering the North Sea would dump there.

North Sea is a common practice.[20] Although the scale of such dumping is probably much smaller than that of the commercial ocean dumpers whom the legislation was intended to regulate, it is still a reminder that even where the pathway from land to sea is not complex, economic and convenience factors conspire to render scientific knowledge of man's impact on the oceans imperfect.

2. Sea-based sources of marine pollution

Installations, submarine pipelines, and vessels are devices for the production and transportation of hydrocarbons; it is, therefore, to be expected that they pose some risk of oil pollution to the marine environment. Vessels carrying hazardous cargoes may also threaten very serious injury to the sea, but although the potential harm is great,[21] the likelihood of its occurrence is small when compared to

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20. See below, pp. 53, 444.

21. For example, see the account of a freighter which sank in the Adriatic Sea following a collision, carrying with her a cargo of 900 barrels of poisonous lead derivatives. *International Herald Tribune*, 17-18 January 1976, p. 2. Crew training, traffic separation schemes, and vessel construction standards are intended to minimise such risks. See below, p. 106. It has also been suggested that damage to a vessel carrying hazardous materials such as ammonia, chlorine, or liquefied natural gas in close proximimity to inhabited areas could have particularly severe consequences. Bates, C. and Yost, P., "Where Trends the Flow of Merchant Ships?" in Gamble, J. and Pontecorvo, G., *Law of the Sea: The Emerging Regime of the Oceans*, Ballinger Publishing, Cambridge, Mass. (1973), pp. 249-284, at p. 275. This view is certainly supported by the events of 16 April 1947 when the French ship *Grandcamp* caught fire as she was taking on a cargo of ammonium nitrate at Texas City, near Galveston. An attempt was made to tow the burning vessel away from the dock, but before she had been moved very far, she exploded. This in turn set off a tremendous explosion at a chemical plant some 1,000 yards away and also ignited oil refinery installations. At least one-third of the town of 15,000 persons was destroyed and hundreds of people were killed or injured. *The Times*, 17 April 1947, p. 4. *Cf.* the account

oil pollution.[22] This situation results from the express nature and scope of carriage of oil by sea.

Petroleum is the most important potential pollutant of the marine environment because of the tremendous quantity which is carried by sea.[23] Oil is the principal source of energy in the industrialized world and, increasingly, it is produced in one part of the world and consumed in another. A recent study has found that for the year 1973, global oil consumption was 2.76 billion tons, of which 1.70 billion tons (62 per cent.) was transported from point of production to place of consumption, nearly all of it by tanker.[24]

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of an oil company which plans to build a natural gas liquids plant at North Collielow, Peterhead, and the testimony of their witness before an inquiry panel that "out of the estimated 60,000 plus loadings worldwide by liquid petroleum gas tankers since the early 1950s there had been fewer than 100 incidents--and in fewer than 20 of these was there damage to a ship or to shore property." *The Press and Journal* (Aberdeen), 9 June 1976, p. 6.

22. There is general agreement that oil is the most important cargo from the point of view of environmental protection. See, e.g., Sandbrook, R. and Yurchyshyn, A., "Marine Pollution from Vessels," in Stein, R. (ed.), *Critical Environmental Issues on the Law of the Sea*, A Report of the International Institute for Environment and Development, London (1975), pp. 19-29, at p. 19.

23. The risk of oil transportation in the North Sea is described in detail in U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8 (1976), H.M.S.O., particularly paragraph 1.12 and Appendix C.

24. "Out of a total of more than 50,000 merchant ships afloat, 6,000 ships, with a carrying capacity of 180 million DWT were used to transport this oil. . . another 250 million tons of refined petroleum products moved across national borders, predominantly by ship." National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), p. 8; Congress

The increase in size[25] and variety[26] of vessels used to transport hydrocarbons by sea has been described by many writers and

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of the United States, Office of Technology Assessment, *Oil Transportation by Tankers: An Analysis of Marine Pollution and Safety Measures*, Washington, D.C. (1975), at p. 8; citing British Petroleum, *Statistical Review of the World Oil Industry, 1973*.

25. During World War II, 16,000 tons deadweight (DWT) was the standard size tanker; in 1950, a 25,000 ton DWT tanker was considered large; by the mid 1950s a few tankers of 40,000-50,000 tons DWT were operating; following the Suez crisis of 1956 tankers of over 100,000 tons DWT were constructed; in the 1960s the most frequently ordered tanker was just over 200,000 tons DWT. Since that time, tankers of increasing size have been ordered, including a few of 500,000 tons DWT. Congress of the United States, *op. cit.* in footnote 24, at pp. 15-16. This trend has slowed, if not stopped, primarily because of present excess tanker capacity. However, "present sizes of tankers will not diminish on the major long-distance routes" because vast investments have already been made in large ships and because it is probably cheaper to run a large ship on a longer route than several smaller tankers on a shorter route. U.K. Department of the Environment, Central Unit on Environmental Pollution, *op. cit.* in footnote 23, para. 4.6, p. 33. On the other hand, few ports can accommodate the largest supertankers presently in service when they are fully loaded; moreover, many straits (such as the Strait of Malacca), semi-enclosed seas (such as the North Sea) and other shallow areas of the ocean may severely restrict navigation. For this reason, the tankers used in the North Sea are not likely to exceed 300,000 tons DWT. Royal Commission on Environmental Pollution, *Fourth Report*, Cmnd. 5780 (1974), at p. 48.

26. New vessel types include liquefied natural gas carriers, container ships capable of great speeds (and with the capability to carry packaged petroleum products), and a proposed "Arctic tanker" which could break its own ice where necessary. Bates, C. and Yost, P., *op. cit.* in footnote 21, at p. 252. Because of current tanker overcapacity, few new vessels are likely to be built in the near future. The tentative orders by Globtik Tankers Ltd. for three nuclear powered vessels of 600,000 DWT is seen by many shipping experts as a "gigantic risk." *International Herald Tribune*, 3 February 1977, p. 7. Nevertheless, there is reason to believe that the world tanker glut may disappear by 1980, five years earlier than expected. The growth in Middle East exports to the U.S. may not only absorb present tanker capacity, but require the construction of new vessels. *The Economist*, 12 February 1977, p. 104.

therefore will not be discussed in detail here.[27] Suffice to say that, whatever the effects of the current recession on the market for tanker transportation in other parts of the world, the demand for these vessels in the North Sea will increase. Until recently,[28] little tanker traffic traversed the North Sea north of Rotterdam. (See Figure II-1 on the following page.) The North Sea States were exclusively importers of petroleum. As oil is produced from beneath the North Sea this pattern will change. (See Figure II-2 on page 20.) Imports of Middle Eastern oil to Northwest Europe will continue,[29] but new tanker movements resulting from locally produced oil will include:[30]

1. Transportation from some U.K. and Norwegian fields to the U.K. and Norway.[31]

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27. See, for example, Birnie, P., "Prevention of Pollution from Ships: Problems and Progress," a paper presented to the British International Studies Association Conference, Birmingham, December 1975. For a popular approach, see Mostert, N., *Supership*, Penguin Books, Harmondsworth, Middlesex, England (1975).

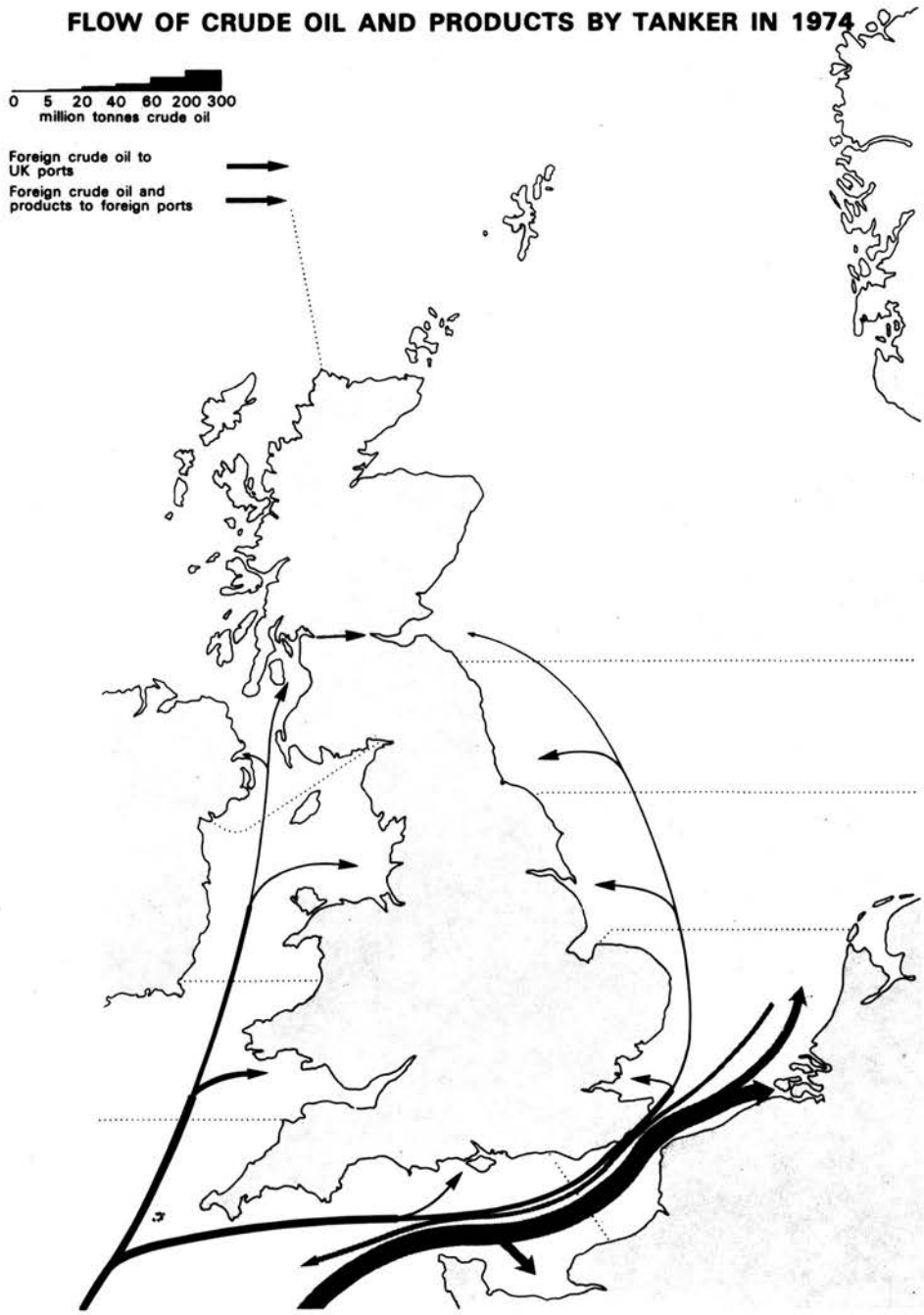
28. North Sea oil production started in July, 1971 when the Norwegian Ekofisk Field went on stream. Initial transfer of recovered oil to Norway was by tanker, the gas being flared. Norwegian Ministry of Industry, *Report No. 30 to the Norwegian Storting*, (1973-74), pp. 15-16. See also Chapter Eight. The first oil from the U.K. sector was brought ashore by tanker from the Argyll Field in June, 1975. U.K. Department of Energy, *Oil from the U.K. Continental Shelf*, Fact Sheet 2 (July 1976), p. 2.

29. North Sea oil is in general lighter than that from the Middle East and is not suitable for all purposes. In consequence, it will be necessary to import some petroleum, even after the U.K. and Norway become net exporters of oil.

30. U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8, H.M.S.O. (1976), para. 4.10, p. 34.

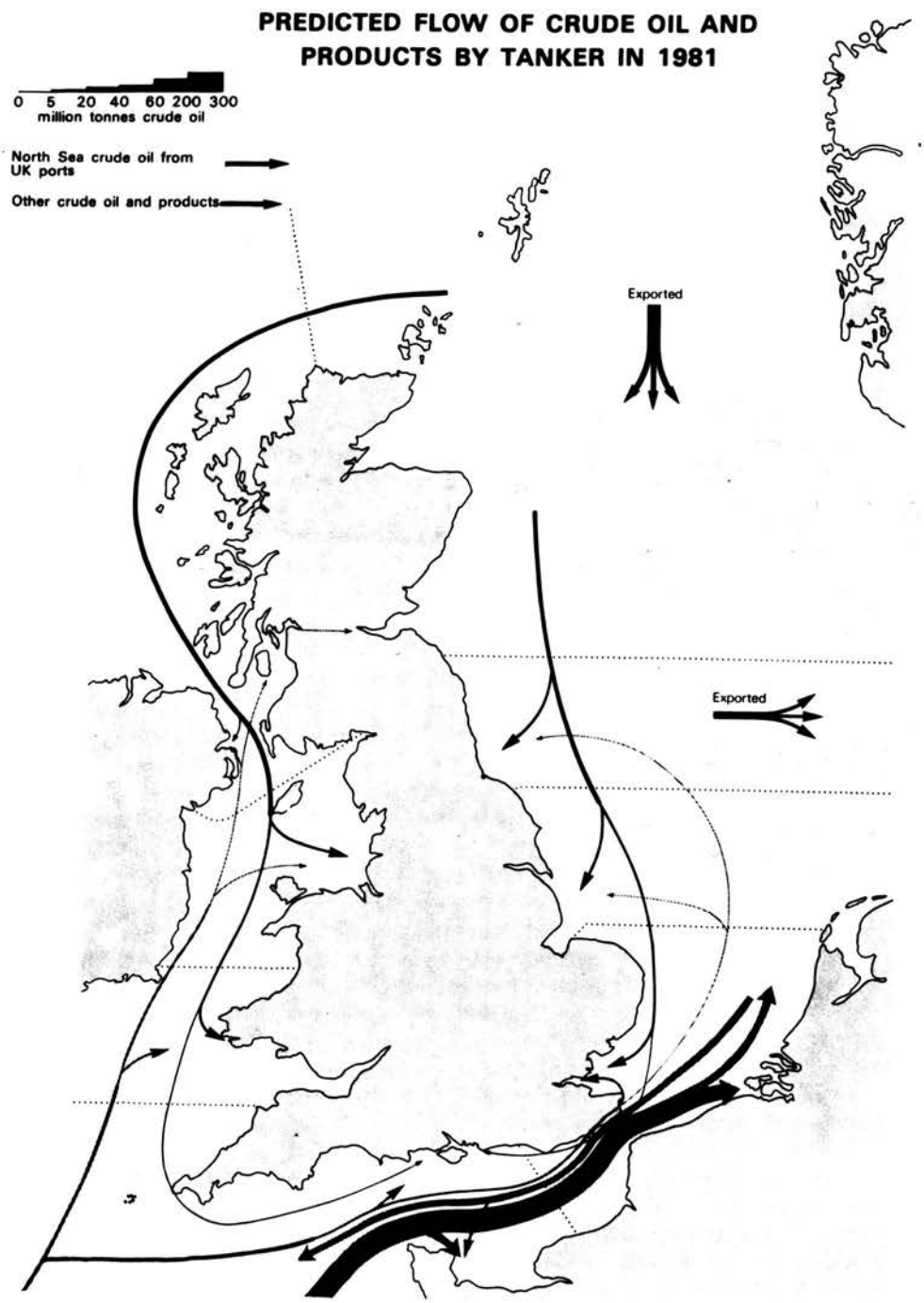
31. Petroleum produced from U.K. and Norwegian fields must be landed

FIGURE II-1



Source: U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8, H.M.S.O. (1976), Figure 3.

FIGURE II-2



Source: U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8, H.M.S.O. (1976), Figure 4.

2. Transportation from U.K. pipeline terminals to U.K. refineries.

3. Transportation from the U.K. and Norway to other countries (including the landing of Norwegian petroleum in the U.K.).

This increased activity is bound to increase the risk of damage to the marine environment of the North Sea and its coasts from operational and accidental discharges of crude oil and derivative products.

The risk of marine pollution from the exploration for and production of petroleum from the North Sea continental shelf is difficult to assess because there is no history from which to extrapolate precedents and comparisons with established areas, such as the Gulf of Mexico, must be viewed with the caution that oceanographic and meteorological differences require. This task will be undertaken in the context of an examination of all sources of marine oil pollution.

The data presented in Table II-1 provide a basis for assumptions about oil discharges into the North Sea.[32] It was observed above that

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in the U.K. and Norway respectively before it can be exported, unless an exception is granted. Norwegian petroleum piped from the Ekofisk field to Teesside, England, and thence by tanker to Norway is such an exception. See the U.K. Petroleum (Production) Regulations 1976, Schedule 5, Model Clause 28; see also the Royal Decree of 8th December 1972 relating to Exploration for and Exploitation of Petroleum in the Seabed and Substrata of the Norwegian Continental Shelf, S. 34.

32. The estimate presented in Table II-1 is but one of many. See, for example, National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), Table 1-6, p. 6, "Comparison of Estimates for Petroleum Hydrocarbons Annually Entering the Ocean, circa 1969-1971," which compares MIT, U.S. Coast Guard and NAS estimates. See also Wardley Smith, J., "Oil Spills from Tankers," a paper presented to the Marine Ecology and Oil Pollution Conference, Aviemore, 21-23 April 1975, under the auspices of the Institute of Petroleum. Table 1 of that paper compares three additional estimates of sources of oil in the marine environment. The NAS estimate was selected as a

TABLE II-1

ESTIMATED OIL INPUT TO THE WORLD'S OCEANS FROM ALL SOURCES

Source	Input rate (millions of tons per year)	
	Best estimate	Probable range
Natural seeps	0.6	0.2-1.0
Offshore production	.08	.08-.15
Transportation:		
LOT tankers	.31	.15-.4
Non-LOT tankers	.77	.65-1.0
Dry docking	.25	.2-.3
Terminal operations	.003	.0015-.005
Bilges bunkering	.5	.4-.7
Tanker accidents	.2	.12-.25
Nontanker accidents	.1	.02-.15
Coastal refineries	.2	.2-.3
Atmosphere	.6	.4-.8
Coastal municipal wastes	.3	-
Coastal, nonrefining, industrial wastes	.3	-
Urban runoff	.3	.1-.5
River runoff	1.6	-
Total	6.113	-

Source: Congress of the United States, Office of Technology Assessment, *Oil Transportation by Tankers*, Table III-2, p. 27, citing National Academy of Sciences, *Petroleum in the Marine Environment* (1975).

most marine pollution came from land-based sources and Table II-1 indicates that this is true in the particular case of oil as well. River runoff is the greatest single pathway of marine oil pollution and all land-based sources contribute about one-half of the total. Most of the remainder is accounted for by marine transportation; coastal refineries contribute a small volume, but at present the oil input from offshore production is small. These sea-based sources of oil pollution will be examined in the subsections below.

a) vessels

i) operational discharges

Most vessel-source oil pollution results from normal operations. Table II-1 indicates that non-Load On Top (LOT) tankers, bilge cleaning and bunkering, LOT tankers, and dry docking contribute to marine oil pollution in that order and rank far ahead of accidents and terminal operations. The categories "non-LOT tankers" and "LOT tankers" represent oil discharged as a result of ballasting or

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representative example of recent work by a respected institution. It is recognized that great care must be exercised in the use of these data, particularly when applying them to the North Sea. In the first place, offshore oil production is increasing rapidly: exploration and exploitation is now planned or in progress in a variety of environments off 65 countries and six continents. Production of offshore oil now comprises about 18 per cent of the global total, but is estimated by one writer to increase to 30-40 per cent. of a nearly doubled total by 1980. Ward, B., *op. cit.* in footnote 7, in the Introduction, at pp. 2-3; Hallman, R., "Environmental Regulation of Marine-Based Activities (Non-Vessel) in Areas of National Jurisdiction," in Stein, R. (ed.), *op. cit.* in footnote 22, pp. 9-18, at p. 10. Secondly, caution must be used in attributing the characteristics of the global marine environment to a particular area. For example, although natural seeps exist in the North Sea (National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), p. 7), this is not a significant source of North Sea hydrocarbon input. In the Santa Barbara Channel, this pathway is very important.

tank washing operations.

"Ballasting" is the discharge of water carried in cargo tanks of an otherwise empty tanker to give it stability necessary for safe operation.[33] This is a function of the tanker cargo market: petroleum is usually carried only from producer to consumer and no cargo is available for the return voyage. A tanker is likely to take on ballast as soon as possible on the journey from consumer to producer State, and as all tanks need not be used to achieve the required weight,[34] the ballast water can be shifted from tank to tank while the empty tanks are washed and the oily effluent discharged.[35] This procedure allows the tanker to remain in ballast for the maximum time, for it can retain the clean ballast water until it must be discharged to make room for cargo without incurring the wrath of producing State port officials.

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33. The following description of ballasting and tank washing is based on an account given in a U.K. Department of Trade (Marine Division) brochure, "The battle against oil pollution at sea," (March, 1976), pp. 2-3. This publication also contains useful illustrations of the LOT system.

34. Only about 30 to 40 per cent. of the vessel's DWT tonnage is required as ballast.

35. About one per cent. of the tank's capacity may be discharged with the wash water. The exact percentage depends upon the type of petroleum which was carried; one estimate is that the range is from 0.1 per cent. in the case of light refined products to as much as 1.5 per cent. for residential fuel oils. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), p. 8. The internal surfaces of cargo tanks in some supertankers may cumulatively be measured in acres; it is not surprising, therefore, that oil discharged in washings may amount to thousands of tons. This loss of cargo has an economic cost to the oil companies, as well as an adverse impact on the sea, and one company has developed a method to wash tanks using jets of crude oil which significantly reduces the amount of oil adhering to the tanks when they are water washed.

"Load on top" (LOT) is a procedure whereby one tank is designated to receive the washings from the others rather than discharging oily water from each into the sea. If the voyage is of sufficient length,[36] the seas relatively calm, and the petroleum cargo the usual one of crude oil or other heavy products,[37] the oil will separate from the water, rising to the top and so permitting the discharge of the relatively clean water from below.[38] A new cargo of oil may then be "loaded on top" of the oil thus saved from discharge.[39] As indicated in Table II-1, non-LOT tankers are responsible for about twice as much oil entering the marine environment as vessels using the LOT system. The difference becomes even more significant in the light of estimates that only about twenty per cent. of the world's tankers do not use LOT.[40]

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36. The minimum time necessary for the oil and water to separate properly is approximately three days.

37. Crude oil represents about 85 per cent. of petroleum carried by sea. North Sea oil will initially be carried almost entirely as crude, but as British and Norwegian petrochemical industries expand, it is likely that a considerable volume of refined and synthetic products will be carried as well.

38. The potential for about 99 per cent. efficiency is, in practice, considered to be approximately 90 per cent., because "the performance of a tanker depends on the concern and proficiency of tanker crews." National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 9; citing Victory, G., "The LOT System, Present and Future," *Symposium on Marine Pollution*, Royal Institute of Naval Architects, London (1973), pp. 10-20. It will be seen that crew performance standards that are designed to protect the environment and are scrupulously observed are a *sine qua non* to the control of marine pollution from the development of offshore petroleum.

39. Most refineries are able to accept some sea contaminants in oil.

40. Many of these tankers operate under "flags of convenience" which are, in essence, licences to operate substandard equipment and to

It is generally accepted that rough seas and short voyages will combine to make the LOT system impossible to use for tankers engaged in the carriage of North Sea oil while in that area.[41] The problem thus posed is a new one, for previously as importers of petroleum the North Sea States were "exporters" of ballast water to the Middle East and intermediate points. As oil exporters, however, the U.K. and Norway must consider how to dispose of ballast water not only at ports and harbours, but also at single-point mooring buoys (SBMs) and other offshore installations. As there are both clear legal[42] and strong environmental[43] reasons for avoiding the simple expedient of pumping dirty ballast into the North Sea, it is clear that alternatives

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use procedures which are unacceptable from the point of view of environmental protection or crew safety, sold for the cost-cutting advantages they confer to "resident" (and frequently one ship) corporations.

41. Conversation with Mr. Chris Horrocks, General Council of British Shipping, 15 June 1976.

42. The 1962 Amendments to the 1954 IMCO Convention designate the North Sea as a "prohibited area" in respect of the discharge of specified persistent oils. Of course, this does not bind the ships of States not parties to that instrument (flag of convenience vessels, in many cases), and the restriction of lighter ("white") oils will not be subject to international treaty (although perhaps to voluntary agreement) until the entry into force of the 1973 IMCO Convention. See below, p. 160. It is interesting to note that, in the case of two refined products, the National Academy of Sciences cites IMCO data indicating that of global discharges of benzene and toluene from chemical tanker cleaning, about half of the estimated yearly 240 tonnes of benzene is flushed into the North Sea, but little toluene is involved. National Academy of Sciences, *Assessing Potential Ocean Pollutants*, Washington, D.C. (1975), Table 4-31, pp. 169-170. These data may change drastically if a significant period separates the establishment of a U.K. and/or Norwegian petro-chemical complex and the acceptance of international standards or expanded coastal State jurisdiction.

43. See the discussion of "Effects," below at p. 67.

to LOT must be considered. Three which have been suggested[44] are the provision of oil reception facilities at the oil exporting port or offshore installation, the use of segregated ballast tanks, and the retention of oil cargo onboard as permanent ballast. However, each of these schemes has an associated cost.

The provision of oil reception facilities of sufficient capacity to handle tank washings from a large tanker would entail a substantial investment in plant and equipment. This is particularly true of structures which would be needed to contain ballast water from tankers loading offshore.[45] A further consideration is that discharge of ballast while in port is time consuming and is therefore a cost to both tanker owner and port authority.

Segregated ballast requires separate and exclusive ballast tanks so that the water remains uncontaminated by cargo. Although this solution is being actively considered by IMCO and is particularly favoured by the Americans,[46] adoption of a segregated ballast system

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44. U.K. Department of Trade, *op. cit.* in footnote 33, at p. 2.

45. Some facilities at present provide for the pumping of ballast water into installation oil storage tanks as displacement water. U.K. Department of the Environment, Central Unit on Environmental Pollution, *The Separation of Oil from Water for North Sea Oil Operations*, Pollution Paper No. 6, H.M.S.O. (1976), para. 6, p. 3.

46. As an interim measure prior to the coming into force of the 1973 Convention which will make segregated ballast systems on new tankers of 70,000 tons DWT mandatory. See p. 106, below. It is interesting to note that many tankers that will be used in connection with North Sea oil will be under this tonnage limit. King, N. and Wilkinson, T., "The Sources of Oil Contaminated Discharges Arising Directly from North Sea Operations," a paper presented at the Heriot-Watt Symposium on the Separation of Oil from Water for North Sea Operations, 22-23 June 1976, at p. 7. The tankers used for movement of Ekofisk oil to Norway were in the 40,000 tons DWT class. Taylor, A., "Ekofisk Development: Movement of Oil from

imposes substantial economic penalties on the shipowner because of cargo capacity loss.[47]

A variation of segregated ballast is retention of some oil cargo on board permanently. Tankers employing either type of segregated ballast for North Sea operations are likely to be dedicated; that is, routed in closed patterns between offshore installations and certain ports. This was, in fact, the procedure followed in tanker transportation of petroleum from the Ekofisk field.[48]

Bilge pumping is an activity characteristic of all ships. Although individual discharges are comparatively small, the cumulative effect is significant. Discharges of oil from bilges can be reduced to some extent through the use of oily water separation equipment, an approach required by the IMCO Conventions.[49]

Cleaning for drydock can involve the discharge of large amounts of oil into harbour and inshore waters if adequate reception facilities are not provided. Drydocking usually occurs about every 18 months. All cargo ships must be both clean and gas-free for work to commence, so various substances (including oil) may be washed over-

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Platform to Shore," in Cole, H. (ed.), *Petroleum and the Continental Shelf of North-West Europe*, Vol. 2, "Environmental Protection," Applied Science Publishers Ltd., on behalf of the Institute of Petroleum, Great Britain (1975), pp. 31-35, at p. 32.

47. Segregated ballast tanks mean a loss of 30 to 40 per cent. of possible cargo space. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 4.30, p. 39.

48. Taylor, *loc. cit.* in footnote 46.

49. See below, p. 151.

board. Most vessels wash at sea; only about 50 per cent. on a global average arrive at the drydock port needing washing.[50]

ii) accidental discharges

Table II-1 indicates that oil discharged from vessel accidents is a relatively small part of the total input from all sources. However, it does not necessarily follow that maritime casualties are an insignificant contributor to marine pollution because the oil input from this source tends to be concentrated in shallow, congested waters on tanker routes,[51] and a great part of the total is the result of a few accidents.[52] Reduction of the few catastrophic spills which occur is therefore a desirable goal, although an elusive one, perhaps, because of infrequent occurrences.

Table II-2, on pages 30 and 31, tabulates some significant tanker accidents.[53] It is noteworthy that two common character-

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50. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), p. 9.

51. The effect of petroleum on the marine environment tends to be more severe in coastal waters because they are rich in marine life, the opportunity for natural forces to dissipate the spill is reduced when compared to the open sea, and because environmental and clean up costs escalate rapidly if oil reaches the shore. See below, p. 69 *et seq.* Safety of persons and equipment in coastal areas is a further and very real consideration. For example, a collision involving two tankers off the U.S. coast resulted in a fire that was only kept from a tank farm nearby by favourable winds. Congress of the United States, Office of Technology Assessment, *op. cit.* in footnote 24, at p. 37.

52. U.S. Coast Guard data indicate that the occasional catastrophic spill contributes about 2/3 of the oil volume which is accidentally discharged. Bates, C. and Yost, P., *op. cit.* in footnote 21, at p. 271; citing U.S. Coast Guard, "Pollution Spills in U.S. Waters--1970," Internal Report by U.S. Coast Guard, dated September, 1971 (data covers only 6 months of 1970).

53. Although Tables II-2 and II-3 consider only tankers, they are by

TABLE II-2

SOME MAJOR OIL SPILLS CAUSED BY TANKER ACCIDENTS

Date	Vessel	Accident	Location	Bbls Lost	Oil Type	Effects
3/57	*Tampico Maru*	Grounding	Cove in Baja California	60,000	Diesel	Nearly total devastation immediately, luxuriant growth of seaweed developed within months; biota 90% restored after 3 or 4 years, although relative abundance of certain species still somewhat changed after 12 years
3/67	*Torrey Canyon*	Grounding	5 miles off Cornwall	860,000	Crude	Very high mortalities of intertidal shore life, mostly due to use of toxic emulsifiers; many invertebrates and algae killed on shores; fisheries and plankton apparently unaffected; estimated 10,000 birds killed
9/69	*Florida* (barge)	Grounding	Harbour entrance, West Falmouth, Massachusetts	4,500	No. 2 fuel	Severe pollution of sublittoral zone, with 95% kill of all fauna, including many fish, worms, molluscs, crabs, lobsters, and other crustaceans and invertebrates; local shellfish industry severely affected; Wild Harbour still closed to shellfish fishing in May, 1974

Date	Vessel	Accident	Location	Bbls Lost	Oil Type	Effects
2/70	*Arrow*	Grounding	Chedabucto Bay, Nova Scotia	108,000	Bunker C	Localized damage to intertidal life, where most mortalities were crabs, limpets, and algae, probably killed by smothering; local fish catches normal; about 2,300 birds killed; 5 months after spill, subtidal flora and fauna healthy; fishing and lobstering normal
1/71	*Oregon Standard, Arizona Standard*	Collision	San Francisco Bay	20,000	Bunker C	Some damage to shore life, mainly to acorn barnacles, limpets, mussels, and striped shore crabs; 3,600 birds killed; area nearly normal within 1 year
2/71	*Wafra*	Grounding	Cape Aulhas, South Africa	445,000	Crude	Little damage to intertidal life; 1,135 black footed penguins found oiled

Source: Ecological Analysts, Inc., "Biological Impacts of the Three Offshore Energy Technologies," Working Paper No. 2, in Congress of the United States, Office of Technology Assessment, *Coastal Effects of Offshore Energy Systems*, Vol. II, citing NAS 1975: 74-75.

istics of these accidents are 1) they resulted from grounding or collision, and 2) they occurred in coastal waters. Table II-2 is included to provide the reader with a ready reference to some of the more spectacular and better known tanker disasters; Table II-3 on the following page provides much more comprehensive data on the causes and locations of tankship accidents.[54]

Table II-3 summarizes some of the more significant findings of a recent study which analysed 3,183 tanker "involvements" for the years

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for the greatest actual and potential source of marine hydrocarbon pollution. There are approximately nine times as many other vessels as tankers, but they are much smaller in average size, and the only oil normally on board in bulk is bunker fuel. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 9.

54. There is little data on North Sea tankship accidents. The British "National Maritime Institute" has analysed the circumstances of marine casualties in the Dover Strait area for the period 1958-1971 finding, *inter alia*, that 23 per cent. of ships involved in collisions and 38 per cent. of those stranded were tankers. In only 10 of the 174 collision cases were there records of oil spillage; oil pollution of beaches was reported to have been caused by just one of the stranding incidents. The Institute is now investigating shipping casualties in the North Sea, but as yet has published no findings. Letter from Mr. J.A.H. Paffett, General Manager, National Maritime Institute, to the writer, 13 October 1976; Brown, I. and Wheatley, J.H.W., *National Physical Laboratory Report Mar Sci R101*, October 1972. The Dover Strait at the southern entrance to the North Sea is an area of continuing concern. In 1976, up to 500 vessels a day passed through this area, and as of October of that year there had been five collisions. A joint British/French "Channel Navigation Information Service" was formed following a multiple collision in 1971 and now provides half-hourly bulletins to shipping. *The Times*, 9 October 1976, p. 2. In the absence of comprehensive data on North Sea tankship involvements, this thesis will rely upon the global data compiled by Card (*et al.*), which provide a broader data base and geographic spectrum than the Dover Strait data. Card, J.C. (*et al.*), "Tankship Accidents and Resulting Oil Outflows, 1969-1973," Attachment 1 in Congress of the United States, Office of Technology Assessment, *op. cit.* in footnote 24, at p. 97.

TABLE II-3

CAUSE AND LOCATION OF OIL SPILLS FROM TANKERS, 1969-1973

Type of Involvement	Number of Involvements	Oil Spilled (Long tons)	Location of Involvement					
			Pier	Harbour	Entrance	Coastal	Sea	Unknown
Breakdown	11	29,940	0	1	1	5	3	1
Collision	126	185,088	5	41	25	45	9	1
Explosion	31	94,803	5	4	0	6	15	1
Fire	17	2,935	10	2	0	1	4	0
Grounding	123	230,806	1	27	40	53	0	2
Ramming	46	13,645	18	15	5	4	2	2
Structural Failure	94	339,181	8	9	4	7	64	2
Other	4	54,911	1	0	0	2	1	0
TOTALS	452	951,317	48	99	75	123	98	9

Source: Card, J. (*et al.*), "Tankship Accidents and Resulting Oil Outflows, 1969-1973," in Congress of the United States, Office of Technology Assessment, *Oil Transportation by Tankers*, Attachment 1, pp. 97-105, at pp. 101 and 105.

1969-1973.[55] (An "involvement" is the participation of one vessel in an "accident" which could involve two or more ships.) A brief analysis of the data tabulated in Table II-3 may indicate some peculiarities of tankship involvements which will be of value in a consideration of the legal regime necessary to minimise such occurrences.[56]

Collision and grounding were the most frequently occurring causes, followed by structural failure; however, in terms of quantity of oil spilled, this order is transposed. It is apparent that the average amount of oil discharged from the involvements "fire" and "other" exceeds that of structural failure, but too much importance should not be placed on this fact because concern is with the exception rather than the norm. From this point of view, structural failure, grounding and collision have the greatest potential for a calamitous discharge of oil.

Structural failure of a tanker at sea, though relatively uncommon, could well result in a major loss of cargo. The possibility of such an occurrence has concerned the U.K. Department of Trade, who have established a Group comprised of its own senior officials and representatives from the Ministry of Defence and the shipping industry

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55. The Card (*et al.*) study is based on information compiled from 3,715 worldwide tankship involvements during the period 1969-1973. For 3,183 involvements of tankers exceeding 3,000 tons DWT a number of characteristics are analysed. Table II-3 in this thesis is a synthesis of Tables 4 and 8 of the Card (*et al.*) study, and is concerned only with accidents involving oil loss because it is this type of accident that it is sought to prevent.

56. See Chapter Ten, A Model Legal Regime for the North Sea, below at p. 515.

to consider this and other safety-related problems. Preliminary findings of the U.K. Group indicate that

> "while the overextrapolation of data in the early design and construction of Very Large Crude Carriers (VLCCs) may have given rise to problems, these were quickly overcome, the incidence of hull failure is extremely rare, and the modern supertanker if properly handled is basically as safe as the smaller ships which it replaces."[57]

Even if this conclusion is accepted without question,[58] it is not particularly reassuring, for it says no more than "supertankers are no less safe than their smaller progenitors, *but they are no more safe either*." This being the assertion, it provides no basis for altering an extrapolation from the historical data of structural failures worldwide to future incidents of this nature in the North Sea. Much more work is needed to reduce even the possibility of structural failure which the U.K. Group appear to think negligible, as well as research into the causes of the closely-related but distinct problem of tanker explosions.[59] It is also of critical importance that the proviso, "if properly handled" is always satisfied by the operators of North Sea tankers; the work of IMCO and the International Labour Organization (ILO) will be of great use in this regard.[60]

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57. U.K. Department of Trade, *op. cit.* in footnote 33, p. 9.

58. For a rejection of this contention, see Mostert, N. *op. cit.* in footnote 27.

59. A number of cargo tank explosions resulted in tanker losses a few years ago. Many tankers are now equipped with inert gas systems in their cargo tanks to reduce the possibility of explosion. For an account of tank explosions, see Mostert, N., *op. cit.* in footnote 27. The use of inert gas systems is discussed in Congress of the United States, Office of Technology Assessment, *op cit.* in footnote 24, at pp. 52-54.

60. IMCO is also considering the problem of substandard ships of all kinds. The present work of IMCO is discussed below, at p. 106.

Grounding is an increasingly likely source of tanker casualties because supertankers have grown in cargo capacity by expanding all dimensions, but particularly vessel draft.[61] Although tanker size in the North Sea will be limited, there are still many shallow areas.[62] Another potential problem is the likelihood that present navigational charts will be inadequate to prevent the new, deep-draft additions to North Sea commerce from grounding or striking an uncharted submarine object.[63] It is clear that proper charts are a *sine qua non* of safe navigation; cost-cutting at the expense of North Sea hydrography is, from an environmental point of view at least, false economy indeed.

IMCO and ILO activities intended to increase standards of seamanship are relevant to efforts to reduce vessel groundings.[64] In

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61. Fully laden supertankers may draw up to 90 feet of water. Congress of the United States, Office of Technology Assessment, *op. cit.* in footnote 24, at p. 23.

62. In the Strait of Dover, the deepest channel at low tide is about 29 metres. Tankers inbound from the Persian Gulf have been limited to a maximum draft of just over 20 metres, and the Dover Strait Pilot "recommends" masters to allow an under-keel clearance of 5 metres, "a very generous allowance." U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 4.8, p. 33.

63. This is a serious concern of U.K. officials. See the *Report from the Select Committee on Science and Technology,* Offshore Engineering, Session 1974, H.M.S.O. (1974), particularly para. 119, at p. 38. See also numerous letters to *The Times,* for example that of D.C. Cumming of the Royal Geographical Society, 5 March 1975, at p. 15. See also, Advisory Committee on Oil Pollution of the Sea, *Annual Report, 1974* (1975), at p. 9. The *Annual Report* of the Hydrographer of the Royal Navy also contains findings and comments of particular relevance to North Sea tanker operations, including a warning that tankers risk grounding through miscalculation when using tables of predicted tide levels (reported in *The Times*, 18 May 1974, at p. 3), and the discovery in one year of 95 previously uncharted wrecks in the English Channel as well as uncharted shoals in deep water near the Hebrides and East Anglia (*The Times*, 3 May 1975, p. 2).

64. See, for example, the account of the grounding of the *Deep Sea*

addition, the former organisation is investigating construction techniques such as double hulls or double bottoms to reduce the possibility of oil outflow should a grounding occur. The use of double hulls or bottoms is of controversial value, the main points of a voluminous literature on the subject being the amount of cargo such construction would be likely to save from discharge in a typical grounding or collision, and, on the other hand, the construction and cargo capacity costs, as well as possible safety considerations.[65]

A collision between two laden supertankers would be the environmental equivalent of a midair disaster involving two filled wide-bodied passenger aircraft: fortunately, neither has yet happened, although there have been near misses and, in the case of tankers, actual collisions involving smaller vessels.[66]

Driller north of Bergen in *The Scotsman*, 3 June 1976, at p. 6. A commission of inquiry concluded that the grounding was the direct result of three mistakes made by the captain. It has been implied, however, that some groundings may well be the result of attention to economic considerations rather than inattention to or ignorance of matters of safety: one source reports that an extra foot of vessel draught means another £25,000 per year to the oil company. Sibthorp, M. (ed.) *op. cit.* in footnote 12, at p. 48.

65. The Office of Technology Assessment Report (*op. cit.* in footnote 24) contains a discussion of issues involved in assessing the desirability of employing double hulls or double bottoms, at pp. 39 *et seq.* See also, Chapter Three, wherein IMCO activities in respect of segregated ballast and double hulls are described, and *The Times*, 30 March 1976, reporting the first meeting of the International Maritime Industries Forum, in which segregated ballast was considered as one possible solution to excess tanker capacity, at p. 21.

66. See, for example, the account of the *Oregon Standard/Arizona Standard* collision in San Francisco Bay, in Office of Technology Assessment, *op. cit.* in footnote 24, at pp. 35-36 and Attachment 6, at pp. 242-284. The accident between the two 10,500 gross ton vessels resulted in the loss of 20,000 barrels of Bunker C fuel oil, which caused heavy beach pollution. See also, the

Supertankers are characterized by great mass and inertia and are therefore difficult to manoeuvre.[67] This problem is exacerbated by tanker design: a single screw design permits more economical operation than twin screws, but vessel handling characteristics are much reduced.[68] There is, in consequence, a much diminished margin for human error. Increased standards of seamanship induced by training can do much to compensate for poor manoeuvrability, but behavioural changes must be complemented by applied technology if the seaman is to realise his potential.[69] The standards thus made possible must then be implemented. While voluntary compliance is certainly possible, especially in a group with common interests such as the major oil companies, where the class is larger and the interests more disparate

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account of the *Allegro/Pacific Glory* collision in Chapter Six, at p. 362.

67. A recent report concluded that a 500,000 deadweight ton vessel would need approximately four miles to stop from cruising speed, one and one-half miles to stop at eight knots, and nearly one-half mile to stop at four knots. However, supertankers cannot steer at less than five or six knots! Frye, J., "Oil, Superships, and the Oceans," *Oceans*, (Jan. - Feb. 1974) pp. 48-55, at p. 50; citing "a three-volume report by a special consultant, Arthur D. Little, Inc., of Cambridge, Massachussets."

68. *Hansard*, H.C. Vol. 809, cols. 187-88, 13 January 1971. See also, Dillon, E., "Ship Construction and Operation Standards for Oil Pollution Abatement," in NATO, Committee on the Challenges of Modern Society, *Coastal Water Pollution of the Sea by Oil Spills*, p. 3.1, Brussels (1970).

69. See, for example, the plea by the accused commander of the *Reward*, an oil and fishery protection vessel which sank after a collision in the Firth of Forth, that uncertain and inflexible starting of the converted tug's engines caused him to keep them running, despite thick fog. The Chief Petty Officer in charge of the *Reward*'s engines described them as "very old fashioned." *The Scotsman*, 23 October 1976, p. 5.

the formality of law may be required. Thus, shipowners,[70] cargo owners,[71] and offshore operators[72] may unite to promote safe and environmentally sound operating practices; conversely, the flouting of vessel traffic separation schemes in the Dover Strait by continental fishing boats is notorious.[73]

A recent paper compared the aviation and shipping industries in respect of safety practices and found the older industry wanting. Some of the recommendations proposed to increase maritime safety are footnoted.[74]

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70. See the description of TOVALOP, below at p. 262.

71. See the description of CRISTAL, below at p. 269.

72. See the description of OPOL, below at p. 251.

73. Following the collision of the *Achilles* and the *Olympic Alliance* in November, 1975, Mr. Clinton Davis, Under-Secretary at the Department of Trade singled out French trawlers fishing out of Boulogne as particularly guilty of violating the then voluntary traffic separation schemes in the English Channel. The French vessels were said to sail as directly as possible to the Dogger Bank fishing grounds, ignoring traffic lanes. The voluntary scheme has been replaced by an Agreement which is to come into force in July, 1977, and which requires States Parties thereto to observe traffic rules. *The Times*, 6 December 1975, p. 4; *ibid.*, 15 July 1976, p. 6.

74. Madsen, S., Nicastro, F., and Schumacher, D., "Aviation/Marine--A Study of Contrast," Proceedings 17th Annual Tanker Conference, American Petroleum Institute, Washington, D.C. (1972); cited in Bates, C. and Yost, P., *op. cit.* in footnote 21, at pp. 273-274.
    1. Establishment of mandatory traffic separation lanes in heavily trafficked international waterways of the world along with an enforcement mechanism to ensure compliance.
    2. Encouragement of governments to establish mandatory sea lanes in their coastal waters.
    3. Establishment of radar monitoring and enforceable traffic control systems in critical pilotage waters, including such straits as the English Channel.
    4. Requiring vessels to establish and maintain radio contact with existing harbour radar networks.
    5. Establishment of English as the universal maritime language for communication between pilot and master, pilot and local

The increased use of the North Sea also magnifies the possibility of a collision between a vessel and an offshore installation. It is difficult to estimate the probability of such an occurrence from North Sea data because offshore activity in that area is comparatively recent. Likewise, although data exist from the Gulf of Mexico, production platforms in that area are concentrated where large ships rarely sail, except at well-marked entrances to harbours.[75] It is not

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harbour advisory service, and pilots and tugs.

6. Provision of preplanned route information for frequently travelled trade routes.
7. Provision of coded radar transponders in fixed key positions as all-weather navigation aids in pilotage waters.
8. Establishment of international rules requiring that all marine navigation equipment must meet certain minimum performance and reliability standards. If the vessel in question would be operating in an IMCO traffic separation scheme, then this navigation equipment should include radar, Loran/Decca, or a similar electronic navigation device.
9. Encouraging development of more accurate navigational equipment for use in coastal waters, as well as advanced collision avoidance systems.
10. Preparing better instructions to ship masters defining minimum safety navigation conditions considering limitations of his navigational equipment and the local geography.
11. Stiffening international maritime licensing requirements for ships' officers so there is included performance testing under both normal and stress conditions, periodic proficiency checks to hold the licence, and some restrictions as to size and class of ship the individual is licensed to operate.
12. Updating curriculum *[sic]*of maritime training academies to include modern problems in ship-handling, navigation, and collision avoidance, and cargo handling, including the handling of liquid cargo, with some stress placed on the operations of very large vessels that are now becoming commonplace.
13. Introduction of additional formal training before an officer can advance in grade; such training might take the form of working with special simulators for enhancing navigation and collision avoidance skills.

75. Congress of the United States, Office of Technology Assessment, Ocean Assessment Program, *Coastal Effects of Offshore Energy*

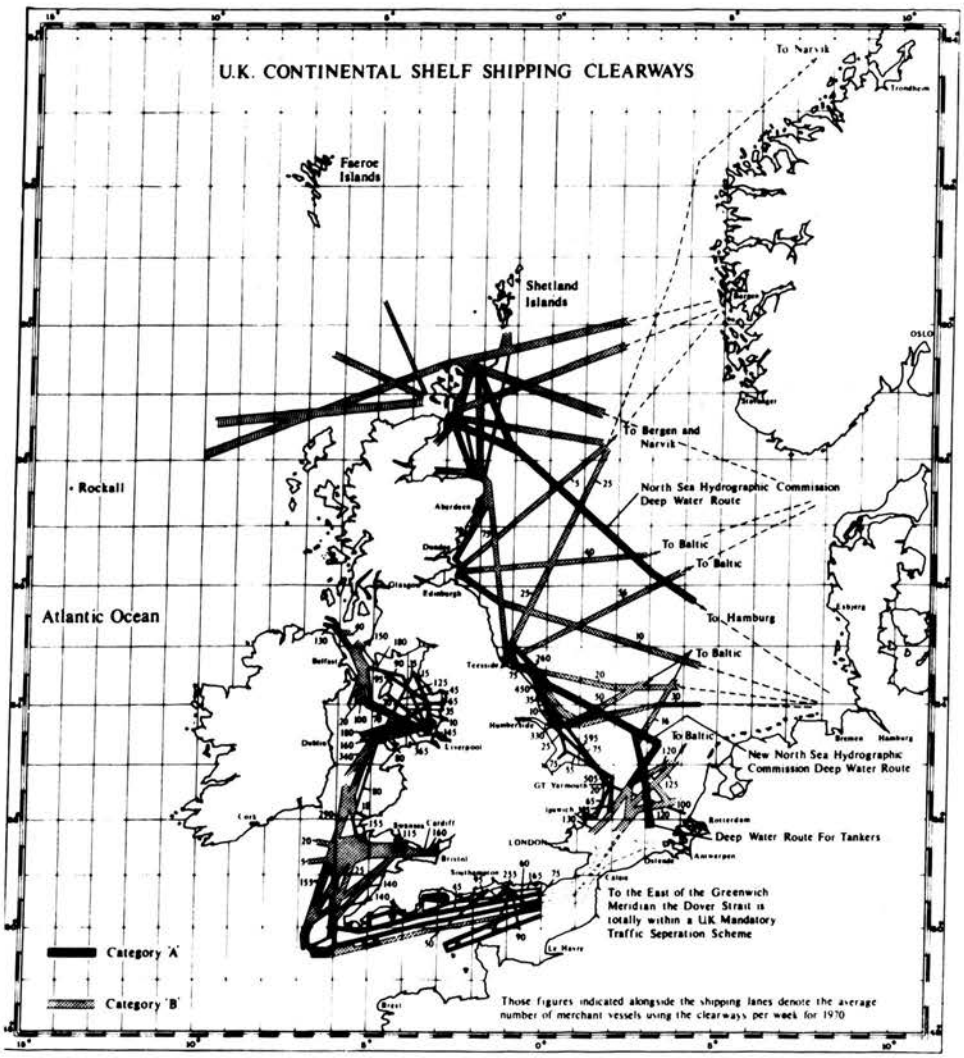
surprising, therefore, that only a few instances of collision have been reported.[76] The possibility of collisions with installations in the North Sea would appear to be greater than in the Gulf because the intensity of competitive use is much greater: not only is the area used for navigation, but it is host to a flotilla of fishing boats, and in all kinds of weather. See Figure II-3, which depicts U.K. continental shelf clearways. The severe nature of North Sea weather is perhaps the most important difference from the Gulf, and could well contribute to a collision because of decreased visibility or rendering a vessel difficult to control.[77]

Development: Oil and Gas Systems, (summary of an interim report) (March 16, 1976), at p. 37. The OTA was assessing the impact of offshore installations on other ocean users which would be likely when the Baltimore Canyon Trough is developed. They concluded that development off the U.S. Atlantic coast would present more user conflicts than had been the case in the Gulf, but that technology existed to lessen undesired effects.

76. The OTA reports 10 major accidents involving ships striking drill rigs in the Gulf of Mexico in the past 10 years. *Ibid.*, pp. 37-38. A British writer citing U.S. data has stated that "in the 11 years 1962-73, 30 incidents of collision between vessels and platforms in the Gulf of Mexico were reported; of these 8 involved vessels of over 1000 gross tons. They were all outside established shipping fairway and anchorage areas. There are now some 2000 rigs and platforms in the area. No pollution was reported." Wardley Smith, J., "Oil Exploration in the Celtic Sea--A Review of the Pollution Risk," David Davies Memorial Institute of International Studies (September 1975), at p. 7; citing U.S. Department of the Interior, Draft Environmental Statement Vol. 2 or 4, *Proposed 1975 Outer Continental Shelf Oil and Gas General Lease Offshore Texas*, pp. 589-93. One collision casualty in 1975 was the British tanker *Globtik Sun* which burned after ramming an unmanned oil rig in the Gulf. *The Times*, 16 August 1975, p. 1.

77. One writer has observed that the risks of collision with a drilling rig require the same techniques of avoidance that are used to keep ships off shoals and rocks; but even if this is conceded, it does not address the argument that an increase in obstacles will place increased demands on techniques to avoid an increased level of risk. See, Warbrick, C., "The Regulation of

FIGURE II-3



Source: Draft serial atlas of North Sea (MAFF).

The possibility of a vessel or other installation abandoned, out of control, or adrift from its moorings has caused considerable concern among U.K. officials.[78] This concern may be well placed, for incidents involving a barge[79] and a mooring buoy[80] have already occurred. This also raises an interesting legal question: would destruction of the threatening object be consistent with international law? The answer depends upon the particular circumstances; these are discussed in some detail in connection with the Intervention Convention.[81]

b) petroleum transfer and refining

It will be recalled from Table II-1 that a small quantity of oil is discharged into the sea from terminal operations and from coastal refineries. These inputs are small, but they are significant since they are repetitive and occur in the same area. Thus, the cumulative

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Navigation," in Churchill, R. (*et al.*), (eds), *New Directions in the Law of the Sea*, Vol. 3, British Institute of International and Comparative Law, London (1973), pp. 137-154, at p. 138; citing Beattie, "Marketing a New Radar," *Journal of the Institute of Navigation*, (1970), p. 212.

78. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.41, p. 58. The Report states that "contingency measures are now under active discussion."

79. "A 350 ft barge carrying a 3,300-ton steel oil rig structure, a mass of girders standing 100 ft high, was adrift for nearly 15 hours in the North Sea yesterday after breaking loose from two tugs in heavy seas." The wayward craft was recaptured before any damage occurred. *The Times*, 21 March 1975, p. 2. Also see U.K. Department of Energy, *Report on the Loss of the Drilling Barge Transocean III*, H.M.S.O. (1975).

80. "Tugs were last night battling against gale-force winds in the North Sea in an attempt to 'recapture' a 480-foot high tanker loading buoy which had twice broken adrift in two days." The buoy was captured before collision or grounding. *The Scotsman*, 8 December 1975, p. 1.

81. See below, p. 188.

effect of such discharges is great, and, depending upon the ability of the receiving waters to absorb and disperse pollutants, it may be necessary to control them.

"Terminal operations" includes the loading and unloading processes which have traditionally occurred in harbours. In the case of the North Sea, however, one must also consider the various existing and proposed schemes for offshore loading of tankers.[82] It has been estimated that, as a global average, an oil spill will occur for between every 50 and 100 loading or unloading operations.[83] These spills are usually less than one barrel,[84] but when the occasional major discharge does occur it can usually be dealt with quickly as it is confined to the calm waters of the harbour and clean up equipment is readily available.

Petroleum transfer in connection with North Sea oil production requires expansion of capability to deal with oil spills, as well as

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82. Another important facet of the changes in terminal operations wrought by North Sea oil production is the metamorphosis of existing oil receiving ports into combination import/export centres, and the consequent problems of dealing with oily ballast water.

83. Wardley Smith, J., *op. cit.* in footnote 76, at p. 9; citing Dudley, G., "Incidence and Treatment of Oil Pollution in Oil Ports," a paper presented to the Conference on Marine Ecology and Oil Pollution, Aviemore (1975). The most common cause of spills during oil transfer operations is failure or incorrect manipulation of one of the many valves in the tanker's plumbing. A common procedural error is opening the sea valve to discharge ballast water before the pump is activated at the same time that oil is being loaded. *Ibid.*, at p. 3. An open valve caused one of the largest spills in TOVALOP records, that of 2597 tons from the *Universe Leader* in Bantry Bay, 21 October 1974. *Ibid.*, at p. 9; Note, "Flag of Convenience--No Pollution Alibi," 64 *New Scientist* 490 (1974).

84. Wardley Smith, J., *op. cit.* in footnote 76, at p. 9.

continued research toward reducing discharges from this source and mitigating their effects.[85] New oil terminals will require additional investment in personnel and equipment to deal with possible spills;[86] the new system of offshore tanker loading may require new techniques as well. To date, oil spills from SBM's have apparently not been

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85. One area of research is the development of automatic monitoring equipment to stop discharge when the oil/water interface nears the discharge point. One report suggests that had such equipment been in use, the Bantry Bay spillage would have been much reduced. *New Scientist, loc. cit.* in footnote 83. Automatic monitoring equipment will be required by the 1973 IMCO Convention, but objections have been made that reliable monitors for persistent oil vessels do not currently exist and that new technology would be required before the monitoring requirement could be complied with by clean product tankers. See, Oil Companies International Marine Forum, *International Convention for the Prevention of Pollution from Ships, 1973*, London (1974), particularly at p. 9. See also the discussion of the 1973 IMCO Convention below, p. 160. More mundane improvements have also been urged: standardized couplings should replace the current mix, other couplings should be uniform as well, there has been criticism of using butterfly valves instead of gate valves. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 5.22, p. 47.

86. The U.K. Department of Trade has conceded that the emergence of the Orkney and Shetland Islands as oil terminals will create the risk of pollution in those waters, and as there is at present no Marine Survey Office in the Islands, the Department is considering "the best method of achieving a rapid response to such an incident." U.K. Department of Trade, *op. cit.* in footnote 33, at p. 12. See also U.K. Royal Commission on Environmental Pollution, *op. cit.* in footnote 25, at para. 227, p. 82. "We note, however, that because of the arrangements for landing oil from the North Sea, the risk of serious pollution is likely to be concentrated in the area of the Shetlands where there is a hazard to wild life, particularly to the very large numbers of sea birds, and where difficulties of applying clean-up measures will be greatest." Milford Haven, the major oil-receiving port in the U.K., has an enviable record of spillage prevention and might well serve as a model for the new ports. However, it has been pointed out that even the Milford Haven standards may have to be bettered as the volume of oil handled increases. *Ibid.*, p. 48.

significant anywhere;[87] the minor spill accompanying the inauguration of Argyll production[88] may represent a typical mishap. Small spills in the open sea are quickly dispersed by natural forces, and, in the case of the U.K., a standby pollution protection vessel is nearby during loading operations.[89]

There is at present no offshore refining of North Sea oil,[90] although the technology exists to do so should the advantages outweigh the considerable expense which would be involved. A more likely possibility is the manufacture of hydrocarbon-based products, such as ammonia or liquid natural gas on installations near production platforms.[91] Proximity to the raw material and availability of tanker transport are advantages, but what may be particularly attractive is the relative freedom to pollute by effluent, smoke and noise when

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87. Wardley Smith, J. *op. cit.* in footnote 76, at p. 9.

88. U.K. Department of Energy, *Development of the Oil and Gas Reserves of the United Kingdom* (1976), p. 16.

89. Fulleylove, R., "Oil Spills and the Offshore Oil Industry," a paper delivered to Offshore Europe, a Conference held at Aberdeen, 19 September 1975, at p. 4. A B.P. spokesman has assured the writer that no spills of North Sea oil have occurred during transfer operations in the Firth of Forth. Telephone conversation with Mr. Ron Findley, B.P. Public Relations, Grangemouth, 23 February 1977.

90. As this thesis encompasses only marine pollution which may result from activities at sea, the discharge of effluents into the sea from refineries on land is not considered.

91. German and French companies are developing a LNG plant to be located on a floating platform, and which will load directly on to LNG carriers. *Noroil* (October, 1975), at p. 86. The U.S. is considering a different but related use of coastal waters, that of nuclear powerplant location. The U.S. Office of Technology Assessment was asked to study the effects of "construction of a floating nuclear power plant inside a protective breakwater some three miles off the coast of New Jersey." OTA, *op. cit.* in footnote 75, at p. 1.

compared to land-based sites.[92]

The objection to refineries is that they must separate some water from the oil they receive, but separation is imperfect and some oil remains in the water discharged.[93] This problem also characterizes the offshore production of oil, and is discussed under the heading of "operational discharges," immediately below.

c) offshore petroleum development

The exploration for, and production and transportation of, petroleum from the North Sea continental shelf has increased the risk of injury to the environment from discharges of harmful substances. This assertion rests on the commonsense proposition that risk increases with exposure to harm,[94] and upon the contention that the proliferation

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92. Freedom to pollute may be the impetus to the first large-scale offshore installation to process offshore oil. Exxon, holder of a large lease on the Outer Continental Shelf (i.e., under federal rather than California jurisdiction) off Santa Barbara, has "vowed" to "do its initial processing at sea rather than meet state requirements for onshore operations." *International Herald Tribune*, 10 March 1976, p. 3. This resolve can only be strengthened by a recent report that state officials have refused to licence the unloading of Alaskan oil from supertankers at a terminal near Los Angeles unless federal regulations limiting hydrocarbon emission into the already smoggy air are promulgated. *International Herald Tribune*, 23 September 1976, p. 4.

93. As noted above in connection with vessels, considerable efforts are being expended toward the improvement of oily-water separators. Under current technological limitations, some oil discharge is inevitable; there is controversey concerning possible and desirable levels of oil in the effluent. See, for example, U.K. Department of the Environment, *op. cit.* in footnote 45; National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 10.

94. The U.K. Department of the Environment has published an assessment of oil spill risks, basing their methodology on a previous

of devices to extract oil from the seabed has also increased the potential injury to the environment caused by operational or accidental discharges of harmful substances. It is the object of this section briefly to describe such offshore operations and to indicate the manner in which certain activities could cause the introduction of harmful substances into the sea. No attempt has been made herein to quantify the risk posed by the various offshore activities. An accurate estimate of such risks is difficult because, as observed earlier, there is little history upon which to base a forecast and comparisons with more established areas may be misleading. The recent U.K. Report which has provided much of the material for this chapter has hazarded an estimate of risk from North Sea oil development, and the reader is referred to that study.[95] This thesis is limited to the more modest objective of outlining the nature of the risks which may be presented.[96]

i) operational discharges

Operational discharges are those inputs into the environment that occur as part of the normal job of searching for, producing or transporting oil. Five types of operational discharges associated

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study done by the Massachussets Institute of Technology (MIT). The basic MIT premise was that the number of accidents was broadly proportional to the volume of oil handled. U.K. Department of the Environment, *op. cit.* in footnote 30, at p. 62, *et seq.* The MIT 1974 study was for the U.S. Council on Environmental Quality.

95. U.K. Department of the Environment, *op. cit.* in footnote 30.

96. The conclusions of the Department of Environment Report form part of the basis for the suggested Model Legal Regime for the North Sea suggested in Chapter Ten.

with offshore petroleum development have been isolated.[97] These are discussed in the paragraphs below.

Displacement water discharges are similar to the pumping of ballast water from tankers. Production platforms contain storage space for oil which is to be held before being pumped to pipeline or tanker.[98] If there is no oil to be stored, the tanks are filled with water to add to the platform weight and hence its stability. When oil is pumped into the tanks, the displaced water may be pumped out through an oily-water separation system or, in the case of tanks designed with an open bottom, the heavier water is simply pushed out the opening by oil pumped into the tank from the top.[99] Even water which has passed through the separation treatment will still contain some oil. In the case of U.K. operations, this has been estimated at 25 parts of oil per million parts (ppm) of water, or 325 tonnes of oil per year.[100]

Production water is the water which is mixed with the produced oil. It may occur naturally or it can result from injection of water into a field which no longer has sufficient pressure to force the oil to the surface.[101] The proportion of production water in crude oil

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97. Seismic surveys are not included because it is not thought that the new controlled impact technique has any significant effect on marine life. See, Shelton, R., "Effects on Fisheries," in Institute of Petroleum, *op. cit.* in footnote 46, pp. 75-81, at p. 75.

98. U.K. Department of the Environment, *op. cit.* in footnote 45, at para. 7, pp. 3-4.

99. *Ibid.*

100. *Ibid.*

101. Water or gas injection is also used to prevent subsidence, as

varies, ranging from less than one per cent. in new fields to approximately 30 per cent. in older reservoirs which require water injection.[102] The amount of water in the oil determines where separation occurs; initially it can be done on the platform, but the large quantities of water which must be processed as the field declines makes it more economical to process some effluents on shore.[103] It has been estimated that processed water will still contain some 25 ppm of oil, and that this would result in a yearly average discharge of 250 tonnes of oil from platforms and 75 tonnes from coastal terminals.[104]

Drilling muds are used to prevent loss of well pressure, to cool and lubricate the drill string and bit, to seal and support the well walls, and to carry cuttings to the surface.[105] The mixture is composed

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has happened in Long Beach, California. For this reason Shell (U.K.) Ltd. uses injection in all offshore development. A.L. Crockford, in the discussion following a paper given by Williams, G., "The Geologist and the Environment," published as Chapter 1 of Institute of Petroleum, *op. cit.* in footnote 46, at pp. 1-2; the discussion is recorded on p. 3.

102. U.K. Department of the Environment, *op. cit.* in footnote 45, at para. 8, p. 4.

103. Approximately 80 per cent. of U.K. oil will be treated on the platform. *Ibid.*

104. *Ibid.* The U.S. has enacted regulations limiting oily-water discharges to 50 ppm. In 1971 the average discharge in the Gulf of Mexico was 41 ppm. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 6.

105. Crockford, A., (*et al.*), "Exploratory Drilling Well Control Practices," in Institute of Petroleum, *op. cit.* in footnote 46, pp. 5-19, at p. 11. Table I of the cited paper tabulates "Mud chemical consumption/contamination from North Sea exploratory wells," giving toxicity levels and "safety factors" for various chemicals.

of inert weight material to which chemicals are frequently added, and fluid which is usually water, but may be oil.[106] It is not yet known how frequently oil-emulsions or oil-based muds are used in the North Sea, but one writer has suggested that the addition of 2-4 per cent. diesel oil to water-based fluids for specific tasks is not uncommon.[107] Cuttings are separated from the mud and dumped into the sea; in the case of oil-based muds, cuttings are first washed.[108] Solids removal equipment used to purify drilling fluid for re-use does not completely clean the cuttings, and it has been estimated that about five per cent. of the total weight of cuttings dumped is drilling fluid.[109] Depending on the characteristics of the well being drilled, this could amount to 25-50 tons of fluid.[110] Deliberate dumping of drilling mud

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106. White, I.C., "The Environmental Effects of Drilling Fluids," a paper presented to the ICES Workshop on "Hydrocarbons in the Marine Environment," Aberdeen, 1976, at p. 3.

107. *Ibid.* Oil-emulsions contain approximately 7-15 per cent. diesel oil and are used, as are oil-based muds, in exceptional circumstances such as wells being drilled at an acute angle. The addition of small amounts of diesel oil to water-based fluids is done to facilitate the common task of lubrication and to prevent filtrate loss.

108. Crockford, A. (*et al.*), *op. cit.* in footnote 105, at p. 11. Such precautions were taken in developing the Netherlands' Placid oil field. White, I.L. (*et al.*), *North Sea Oil and Gas: Implications for Future U.S. Development*, University of Oklahoma Press, Norman, Oklahoma (1973), at p. 131.

109. White, I.C., *loc. cit.* in footnote 106; citing Woldringh, J., *The Environmental Effect of Dumping Drilling Cuttings in the North Sea and Wadden Sea*, an investigation on behalf of Netherlands Offshore Operators Committee, interim reports 1 and 2 (1973).

110. *Ibid.*, citing Crockford, A. (*et al.*) (*op. cit.* in footnote 105) as well. White observes that this estimate may be high because of variations in the composition of the drilling fluid used and amount and rate of production of cuttings.

is thought to be unusual because its cost makes shipment to shore for purification and re-use economically advantageous.[111] There are, however, small, continuing discharges of mud and chemicals from both exploration rigs and production platforms,[112] as well as additional amounts which may be released operationally or accidentally.[113] Although the amounts of mud discharged are small and mixing in the North Sea is rapid, effects of continuous input of even inert materials into the marine environment are not completely known. Until the changes wrought by mud discharges are known,[114] it may be prudent to refrain from concluding that they are harmless.

Production testing is simply an operation to ensure that oil can flow from the formation to the equipment on the platform.[115] When the fluids reach the platform, they are separated into liquid and gas, the former being burned in the downwind burner. If the burner fails or combustion is incomplete, oil may be discharged into the sea, but the

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111. Letter from Mr. K.D. Evans, U.K. Department of the Environment, to the writer, 9 June 1975.

112. U.K. Scottish Office, "North Sea Oil and the Environment; Pollution: An assessment of the risks and action to deal with incidents," a paper published by the Scottish Office at the request of the Oil Development Council for Scotland (undated), at para. 2.8, p. 6.

113. Crockford, A. (*et al.*), *op. cit.* in footnote 105, at p. 11. Mud may be intentionally dumped because severe weather requires that it be jettisoned to increase stability, because mud treatment has increased the total volume and the excess must be disposed of, at well completion, during surface hole drilling, and during wash down and possibly during control of a well kick. Accidental mud discharges may result from leaks in the mud system. *Ibid.*

114. See p. 87, below.

115. Crockford, A. (*et al.*), *op. cit.* in footnote 105, at p. 13.

amount would be limited to only a few barrels.[116]

Dumping of unwanted materials or substances from platforms or vessels causes pollution in the sense in which that term is being used because it directly affects the activities of fishermen.[117] Material which has been dumped includes oil drums, wire rope, heavy machinery and other oil-related debris.[118] Although offshore operators are well aware of the problems which such dumping can cause fishermen and therefore attempt to transfer such debris to shore,[119] the convenience of "the deep six" as a disposal site for bulky or heavy items can occasionally cause some employees to yield to temptation. Attempts to resolve the problem of such dumping are discussed below.[120]

ii) accidental discharges

It will be recalled that Table II-1 indicated that the estimated oil discharged from offshore production was only about one or two per

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116. One major oil company has a supply boat equipped for dispersant spraying standing by during production testing. *Ibid.*, at p. 16.

117. See the definition of "pollution," above at p. 2. Dumping of sewage and unused food from drilling rigs also occurs, but there is little evidence to suggest that this results in injury to the marine environment in the deep and turbulent waters of the North Sea. Crockford, A. (*et al.*), *op. cit.* in footnote 105, at p. 17. Attention is again drawn to the argument that ignorance of effects does not support a conclusion that there are no adverse consequences resulting from such activities.

118. U. K. Scottish Office, *op. cit.* in footnote 112, at para. 2.9, p. 6. See also below, at p. 444.

119. Crockford, A. (*et al.*), *op. cit.* in footnote 105, at p. 17.

120. Resolution of conflict between the fishing and oil industries is the *raison d'être* of the Fisheries and Offshore Oil Consultative Group, discussed below at p. 258.

cent. of all inputs to the sea.[121] This figure must be compared with the number of wells drilled in order to arrive at an approximation of the risk of accidental discharge from this source. By 1975, about 25,000 subsea wells had been drilled throughout the world, of which some 600-700 were in the U.K. sector and 123 were in the Norwegian sector of the North Sea.[122] During this period, only four major accidents occurred, all in the U.K. area and all involving only the release of natural gas.[123] See Table II-4. This experience is

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121. See above, p. 22.

122. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 3; *Report No. 81 to the Storting* (1974-1975), at para. 6, p. 8. About one-third of the U.K. total were gas wells. At that time licensees were obligated to drill another 150 exploratory wells, in addition to appraisal and production wells that would be appropriate. *Ibid.* The number of obligatory exploratory wells has increased following the fifth round of U.K. licensing.

123. *Ibid.*, at Annex I, p. 14. Gas is not thought to be harmful to the marine environment since it disperses rapidly into the atmosphere, but it may pose a fire risk. Cole, D., "Offshore Production Practices to Protect the Environment," in Cole, H.(ed.), *op. cit.* in footnote 46, pp. 23-27, at p. 23. In 1974 the Royal Commission on Environmental Pollution reported that "despite extensive exploration, there is no evidence that any significant amount of oil has yet escaped [from offshore installations in the North Sea], and it would have been easily visible had it done so," Fourth Report, *op. cit.* footnote 25, at p. 44. Although one may question whether a "significant" amount of oil "would be easily visible" as a matter of course (for example, is 50 barrels significant? would it necessarily be visible if discharged at night during high seas and winds approaching the top of Sir Francis Beaufort's Scale?), as far as this writer has been able to determine, only minor spills have occurred so far in both the British and Norwegian sectors. One such spill occurred in the U.K. Argyll as a result of leaks in the couplings of two production wells. *The Scotsman*, 1 October 1975, p. 9.

TABLE II-4

MAJOR ACCIDENTS INVOLVING THE LOSS OF NATURAL GAS IN THE U.K. SECTOR OF THE NORTH SEA

Date	Block	Details of Incident
1968	52/5	Blow out; plugged after 3 days.
1968	44/23	Rig blown off location, leaving blowout preventors and side valves closed on a live well. Leak of gas when fishing gear damaged side valve.
1969	49/26	A well producing gas was caused to fracture by a nearby well being drilled off the same platform. As a result, the gas was diverted into the drilling well causing it to blow out. The producing well was sealed to stop the flow.
1971	21/10	Blow out of gas in early stage of well (570 metres) before blow out preventors were installed. The gas flow stopped of its own accord.

Source: U.K. Scottish Office, *North Sea Oil and the Environment*, "Pollution: An assessment of the risks and action to deal with incidents," (1975), Annex I, at p. 14.

representative of that in other areas; for example, in the U.S. during the period 1964-1973, 18,123 wells were drilled offshore, but only four spills in excess of 5000 barrels have occurred--all from production platforms.[124] See Table II-5. Table II-6, a log of spills larger than 50 barrels arising from U.S. operations on the outer continental shelf of the Gulf of Mexico, indicates that even small spills are relatively uncommon.[125]

Despite the limited North Sea history and the record of U.S. operations to the beginning of the decade, it may be rash to assume this record will continue. The quest for energy from beneath the oceans has extended to far more hostile environments than the Gulf of Mexico--or even the southern part of the North Sea.[126] It may be useful, therefore, briefly to describe some of the causes of accidental discharges from offshore installations as such information is relevant not only to present northern North Sea operations, but to projected activities north of the sixty-second parallel.[127]

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124. Cole, D., *loc. cit.* in footnote 123. It is surprising that the major U.S. spills all occurred from production platforms; usually the exploration phase is considered more risky because of greater unknowns. See, U.K. Department of the Environment, *op. cit.* in footnote 29, at para. 6.33, p. 56; Lester, T., and Beynon, L., "Pollution and the Offshore Oil Industry," *Marine Pollution Bulletin* (February 1973), pp. 23-25, at p. 23.

125. Although Table II-6 is limited to wells drilled in the Gulf, this is by far the area of greatest activity to date, 13,500 wells having been drilled in that area compared to 2,500 off California as of 1972. Lester, T., and Beynon, L., *loc. cit.* in footnote 124, citing *Oversight Hearings on OCS Lands Act*, 1972.

126. See *Noroil* (November 1975), an issue dealing with petroleum development in Arctic areas.

127. See below, at pp. 426-427, footnote 15.

TABLE II-5

MAJOR OIL SPILLS FROM INSTALLATION ACCIDENTS

Date	Location	Cause	Oil Loss (bbls)	Effects
1969	California Outer Continental Shelf	Blow out	77,400	Beach fouling, bird kills; no lasting effects
1969	Louisiana		12,200	
1970	Bay Marchand, Louisiana Outer Continental Shelf	Blow out	52,400	
1970	Main Pass Field, Louisiana Outer Continental Shelf	Fire	30,950	

Source: Brockis, G., "Industry Emergency Oil Spill Plans and Programmes," in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 51-54, at p. 53, citing M.I.T., *Analysis of Oil Spill Statistics* (1974); Lester, R. and Beynon, L., "Pollution and the Offshore Oil Industry, *Marine Pollution Bulletin* (February, 1973), pp. 23-25.

TABLE II-6

OIL SPILLS EXCEEDING 50 BARRELS FROM INSTALLATION ACCIDENTS ON THE GULF OF MEXICO OUTER CONTINENTAL SHELF, 1964-1971

Date	Number of Incidents	Average Barrels Per Spill
1964	5	2,986
1965	1	500
1966	0	
1967	2	80,352
1968	2	3,042
1969	8	1,365
1970	7	12,046
1971	20	73

Source: Brockis, G., "Industry Emergency Oil Spill Plans and Programmes," in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 51-54, at p. 52, citing Wilson, R., "Estimate of Annual Input of Petroleum to the Marine Environment from Offshore Production Operations," in *Background Papers for a Workshop on Inputs, Fates and Effects of Petroleum in the Marine Environment*, Airlie, Virginia (1974), Vol. 1, p. 97.

Blowouts occur when gas or oil escapes, driven by its natural reservoir pressure.[128] Exploration well blowouts are the result of insufficient weight of the mud column used to counteract pressure from the well. If well pressure exceeds the hydrostatic pressure exerted by the mud, blowout preventors (BOPs) can be manually activated to shut the well off below the surface of the seabed.[129] It is of some importance to note that exploration BOPs are *manually activated;* an alert and well-trained drill crew are therefore an essential component of the BOP system.

Blowouts from production platforms are likely to have been caused by accidents such as fires or failure of the platform structure or production system components.[130] As in the case of exploratory wells, BOPs are placed in the well itself to arrest pressure-borne oil before it can reach the surface; the BOPs used, however, are automatic. Should the BOP system of a production well fail, there is the danger that a large amount of oil will be released into the sea in addition to the possibility of fire, thus endangering life and equipment and substituting atmospheric for marine pollution.

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128. Fulleylove, R., *op. cit.* in footnote 89, at p. 2.

129. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.32, p. 56.

130. Fulleylove, R., *op. cit.* in footnote 89, at p. 2; U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.36, pp. 56-57. The Santa Barbara blowout occurred when the drill string from a development well was being removed. BOPs were activated, but oil escaped because of insufficient well casing and the highly fissured nature of the seabed. The Bay Marchand blowout occurred after the safety choke was removed to permit well maintenance. A fire followed, and some of the other 21 producing wells on the platform were damaged. Lester, T., and Beynon, L., *op. cit.* in footnote 124, at pp. 23-24; citing

The amount of oil which might be released into the sea from a well blowout depends on so many factors that it is difficult to quantify. For example, the U.K. Department of Environment study estimates that as much as 3,000 tonnes per day might escape from one of the more productive wells in the North Sea,[131] and that in the U.K. sector, there is a 20 per cent. probability of no blowouts, but a 50 per cent. probability of more than one blowout during the period 1967-1980.[132] On the other hand, Norwegian authorities think the daily discharge from a blowout might well be 10,000 tons.[133]

Platform equipment failure could cause a chain of events culminating in the release of oil and smoke. A recent British Report has in particular pointed out the possibility of a high pressure gas line failure which could cause an explosion, eventually resulting in a massive oil spill.[134] It has been pointed out, however, that on a production platform such an occurrence would cause a drop in pressure as oil was released, thus automatically actuating the down-hole safety chokes which would cut off oil flow.[135]

Gaines, T. 43 *Journal of Water Pollution Control Federation* 651 (1971), Berry, W., *Journal of Petroleum Technology* (March 1972), at p. 241, Nelson, R., *Journal of Petroleum Technology*, (March 1972), at p. 225. See Table II-5 at p. 57.

131. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.35, p. 56.

132. *Ibid.*, para. 2.5, p. 8.

133. Conversation with Christian Hambro, Norwegian Ministry of Environment, 12 November 1976.

134. U.K. Royal Commission on Environmental Pollution, *op. cit.* in footnote 25, at p. 45.

135. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 3.

Installation structural failure on a production platform would result in the same automatic shut off in production platforms as has been described for other causes, but this is not true of the manually-operated BOPs used in exploratory wells. The U.K. Department of the Environment has minimised the likelihood of an oil discharge from this source, pointing out that "the possibility of failure coinciding with a potential blow-out situation is very remote," and has instituted an installation certification system to preclude such an occurrence.[136] The importance of an effective certification system is emphasised by the general agreement that collapse of a production platform incorporating oil storage tanks could cause in a particularly large spill.[137]

A collision between a vessel and an installation could well result in oil discharge from both ship and offshore device, as well as possibly causing fire. Although this potential source of pollution was discussed above in connection with vessel accidents, two additional points may appropriately be made here. First, exploration rigs are likely to be subject to oil pollution risk from collisions for only a very brief time during the total drilling operation;[138] production platform discharges from collisions would be limited in the same manner as the case for equipment or structural failure from other causes. The second point concerns defensive measures: North Sea production platforms are lighted, sited "to take account of" essential shipping

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136. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.38, p. 57. The Report notes that regular inspections are an integral part of the certification system. *Ibid.*

137. *Ibid.*

138. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 4. Exposure to such risk is said to be about 10 days per year on

lanes,[139] and are marked on mariners' charts.[140] Prevention of a collision with a subsea storage tank also depends upon accurate and widely-distributed charts as well as visual and/or audible warning devices. The one million barrel Ekofisk oil storage unit extending above the ocean surface is protected by a concrete wall designed to protect the tank itself if a collision does occur.[141] Other units are planned to be sited so that the bulk of storage volume is below keel level.[142] This carefully qualified sentence suggests that even if such units are safely below the draft of the 300,000 ton dwt tankers planned for North Sea service, a minor portion of the stored fluid may still be at risk, to say nothing of the cargo, fuel, equipment and lives on the vessel.

Submarine pipelines are a possible source of marine pollution. Pipelines have long been used on land to transport hydrocarbons,[143] and

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average, when an exploration or appraisal well being drilled can actually yield oil. *Ibid.*

139. This is required by Article 5(6) of the Continental Shelf Convention.

140. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 4. Both U.K. and Norwegian installations are also protected by a 500 metre safety zone as permitted by Article 5(2) of the Continental Shelf Convention.

141. Answer to a question posed in the discussion following a paper by Cole, D., in Cole, H. (ed.), *op. cit.* in footnote 46, at p. 29.

142. *Ibid.* The U.K. Department of the Environment states unequivocally that "all storage units envisaged for use in United Kingdom offshore waters will be below keel levels," and concludes that collision risks are therefore "negligible." (*op. cit.* in footnote 30, at para. 6.40, pp. 57-58).

143. One of the earliest oil pipelines was the six-mile, two-inch diameter project built in Pennsylvania in 1865. Larminie, R., "The Onshore Handling of Oil," in Institute of Petroleum, *op. cit.* in footnote 46, pp. 39-47, at p. 39. Mr. Larminie, of B.P.,

have proved to be the safest form of terrestrial transport.[144] When leaks have occurred, the usual cause was faults in pipe manufacture or welding.[145]

The analogies possible between North Sea submarine pipelines and land pipelines or subsea pipelines in the Gulf of Mexico are limited. North Sea submarine pipelines are a product of emerging technology; indeed, one might say with justification that they are the parent of such technology, for laying and burying of pipelines so long and of such diameter, in deep and troubled waters, has no precedent.[146]

It appears likely[147] that any hydrocarbon loss from North Sea pipelines will be as a result of rupture, rather than leakage around valves,[148] corrosion,[149] or some other cause. To minimise the danger of rupture, submarine pipelines are buried where practicable to protect them from the impact of anchors, trawlboards and the

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presents an interesting account of how petroleum from the Forties Field is handled after it is landed at Cruden Bay.

144. Strichting CONCAWE, *Spillages from Oil Industry Cross-Country Pipelines in Western Europe*, Statistical Summary of Reported Incidents 1972, Report No. 1/74, The Hague (1974), p. 3.

145. *Ibid.*, p. 5.

146. The present and planned North Sea submarine pipeline system is depicted in Figure III-1, at p. 125.

147. One writer is less cautious, asserting that "virtually the only source of oil spillage would be as a result of fracture in the line." Fulleylove, R., *op. cit.* in footnote 89, at p. 3.

148. Leakage in the couplings between the wellhead flow lines and the production platform required the shutdown of two wells on the Argyll field. *The Scotsman*, 1 October 1975, p. 9. It is submitted that any coupling or valve presents some risk of oil discharge from leakage rather than fracture.

149. Corrosion to pipe coatings has occurred much faster than anticipated, investigations undertaken at the Forties and

like.[150] Further protection is afforded by an external coating of concrete which also adds weight to counteract buoyancy.[151] There is some doubt as to how vulnerable pipelines which are left or become[152] exposed are to impacts by trawlboards. A recent Norwegian study has suggested that the concrete coating can be badly damaged by the heavy trawlboards now coming into use, thus leaving the denuded pipeline open to damage.[153] The other view judges such pipelines "quite safe," and dismisses the possibility of damage by trawling as negligible.[154] Trawlboards are an issue because fish are apparently attracted to pipelines which assume the status of artificial reefs: this phenomenon is not lost on fishermen, some of whom are said to trawl the length of the pipe.[155]

Ekofisk Fields have revealed. *The Scotsman*, 7 August 1976, p. 1. Anti-corrosion agents can be added to the fluid transported to reduce internal threats to pipeline integrity.

150. Landfall of the huge Ekofisk pipeline presented a difficult case: "6-7 km. outside Teesside the sea bed was so difficult (a mixture of sand and clay) that eight passes had to be made before the pipeline was 2 feet below sea bed. Specified cover is 2.5 metres, but this is quite simply impossible." *Noroil* (October 1975), at p. 68.

151. A 36-inch diameter pipeline floated to the surface after its concrete jacket began to break away. The pipeline, from the Brent Field to Firth's Voe in the Shetlands, was empty at the time. *The Scotsman*, 15 September 1975, p. 1.

152. The U.K. Department of the Environment thinks that there is little likelihood that pipelines in the northern part of the North Sea will become "unburied" because of seabed characteristics. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 6.42, p. 58.

153. *Noroil* (October 1975), at p. 39. The possibility that an initial break in the concrete coat may lead to further breaking away and a pipe float as described in footnote 151 should also be considered.

154. Wardley Smith, J., *op. cit.* in footnote 76, at pp. 7-8.

155. Reed, L., "Pollution of the Sea," a paper delivered at the Royal

A further, and perhaps greater, danger is posed by the possibility of a large trawler hooking a pipeline in its fishing gear. One writer has observed that a sizeable trawler traveling at four knots could exert as much as 20 tons of pressure on a submarine pipeline. The actual stress would depend upon a number of variables, but it is conceivable that a fracture could result.[156]

Despite these possibilities of hydrocarbon discharges from submarine pipelines, the American experience, admittedly different from that planned for the North Sea,[157] has been that pipeline spills have been rare and small.[158] Many writers think that this would also be the case in the North Sea. Even if a rupture did occur, it is thought that only a small discharge would result because a significant

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Society of Art, Newcastle Meeting, January 1974, at p. 14.

156. Shelton, R., "Effects on Fisheries," in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 75-81, at p. 77. Dr. Shelton observes that in view of the risks involved, priority must be given to improve trenching technology. *Ibid.* See Wood, P., *op. cit.* in footnote 18, at p. 36, Figure 4 for a graphic illustration of North Sea seasonal fishing intensities. This chart is helpful in suggesting where accidental netting of pipelines might occur. As fishing activity is more intense near the U.K. coast, it seems reasonable to hypothesize that pipelines approaching landfall are more vulnerable to this danger. It may be useful to point out that the risk of such an incident varies with the number of pipes and trawlers as well as their locations; thus, recent U.K. legislation providing H.M.G. with the authority to control submarine pipeline use and routeing in an important pollution prevention law.

157. The U.K. Department of the Environment concluded that the percentage of oil brought to shore by pipeline in the North Sea was so much greater than that in the U.S. (which depends heavily upon tankers), that comparisons would be of little value. *Op. cit.*, in footnote 30, at para. 2.6, p. 8.

158. However, one U.S. pipeline discharge of about 900 barrels has been reported. Lester, T., and Beynon, L., *op. cit.* in footnote 124, at p. 23.

spill would entail loss of pressure which would activate automatic shutoff mechanisms.[159] Loss of oil remaining in the pipeline would vary inversely with water depth because of pressure exerted by the water column.[160] The U.K. Department of the Environment has estimated that the most probable loss would amount to only a few hundred tonnes, but under a particular combination of circumstances, the loss might reach 10,000 tonnes.[161]

Damage to subsea well equipment could be caused by anchors or trawlboards, and possibly by collision with a deep-draft vessel. This may become an increasingly probable accident as subsea technology develops, but at present the use of this technique in the North Sea is limited.[162] Subsea installations depend upon charts and buoy markers to provide warning to mariners; future subsea wells may have protective shielding as a further precaution.[163] If damage to a subsea production well occurs, as in the case of its platform-completed counterpart, down-hole safety chokes are designed to be automatically

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159. Wardley Smith, J., *op. cit.* in footnote 76, at p. 8; U.K. Royal Commission on Environmental Pollution, *op. cit.* in footnote 25, at pp. 45, 48.

160. *Ibid.*

161. U.K. D.O.E., *op. cit.* in footnote 30, at para. 6.46, p. 59.

162. The Ekofisk and Argyll fields have made some use of subsea completions, and some operators in the U.K. sector are considering subsea systems as well. Cole, D., "Offshore Production Practices to Protect the Environment," *op. cit.* in footnote 46, at p. 26. Mobil has in fact employed a subsea production system in the Beryl field in the U.K. sector. In a recently reported incident, a West German trawler is alleged to have damaged a control cable running from a platform to a subsea production well a mile away. *The Scotsman*, 3 March 1977, p. 5.

163. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 5.

activated to staunch petroleum flow.[164]

Sabotage to an offshore installation, pipeline, or vessel could cause "accidental" discharge of pollutants into the sea and air. This possibility is being taken very seriously by both the British and Norwegian Governments, and provision is being made for patrol vessels and aircraft to reduce this potential threat.[165]

B. Effects

There is widespread acceptance of the view that many of man's activities may well be causing harm to the environment, but at the same time, there is alarm that we know so little about the precise nature of the changes being wrought, particularly those which may be occurring so gradually as to be virtually undetectable.[166] A corollary to this scientific ignorance is that, since many life systems are slow to manifest the effects of pollution, by the time that damage can be detected it may be irreversible on any human time scale. This may mean that legislation must precede definite knowledge that a dangerous situation exists.[167]

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164. U.K. Scottish Office, *op. cit.* in footnote 112, at p. 5.

165. The nature and scope of the patrol force and the type of equipment it ought to employ have been the subject of dozens of newspaper articles, letters to the editor, and papers.

166. Hardy, M., "International Control of Marine Pollution," 11 *Natural Resources Journal* 296-348 (1971), at p. 297; Birnie, P., "Main Marine Pollutants," a class study sheet prepared for honours students at Edinburgh University, at p. 1.

167. Clark, R., "The Biological Consequences of Oil Pollution of the Sea," in *Water Pollution as a World Problem,* Europa Publications, Ltd., London (1970), pp. 53-73, at p. 63.

The North Sea is used intensively for fishing,[168] navigation, naval activity and waste disposal. It has been concluded by one U.K. Government Department that there is little use conflict,[169] but it is submitted that this refers only to human competition for oceanic resources. From an ecological point of view it must be conceded that little is known of North Sea characteristics or how man may be changing them. Although investigations of man's impact on the North Sea are continuing, much work remains to be done to confirm and expand preliminary findings. When such information becomes available, it will be of great value in setting standards for the discharge of substances into the marine environment.

The subject of how man's activities affect his environment is properly the province of the scientist. There is a vast scientific literature on the subject,[170] and the layman ventures into a discussion of esoterics such as microbial oxidation at considerable risk--both to himself, and perhaps to others whom he may mislead. These dangers notwithstanding, it is submitted that a minimal level of scientific understanding is necessary to enable lawyer and scientist to

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168. "The North Sea constitutes only four thousandths of one percent of the world ocean, yet it yields five percent of the world fish supply." Goldberg, E., in the "Introduction" of *North Sea Science*, MIT Press, London and Cambridge (1973), a collection of the papers presented at the NATO Science Committee Conference, Aviemore, Scotland, 15-20 November 1971, at p. 1. Dr. Goldberg is editor of this book.

169. The Ministry of Agriculture, Fisheries and Food. Wood, P., *op. cit.* in footnote 18, at p. 40. It must be remembered that Mr. Wood's paper was written before any substantial production in the northern part of the North Sea, although gas had been produced in the more congested southern area for some years.

170. See, for example, Moulder, D. and Varley, A., *op. cit.* in note 2.

communicate and so to achieve their common goal of environmental protection.[171] This consideration has led to the inclusion in this thesis of a brief section concerned with the effects of offshore oil development on the environment, and in particular, the changes wrought on the North Sea, its denizens and its users.

In the subsection immediately below four pollutants which could exceed the North Sea's capacity to assimilate them are discussed: oil, installation siting, disposal of wastes, and the discharge of chemicals.

1. The effect of oil

a) the behaviour of oil at sea

Crude oil spilled into the sea will, in general, spread rapidly until it reaches a thickness of a few millimetres; for example, on still water, one cubic metre of oil will spread to a circle 48 metres in diameter in ten minutes.[172] The movement of oil upon the surface of the water depends upon wind and current, and is therefore extremely difficult to predict. Despite these uncertainties, it is known that oil can move great distances under the influence of natural

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171. There may also be a case for introducing scientists to the limitations international law may impose on desirable actions.

172. Fulleylove, R., *op. cit.* in footnote 89, at p. 5. The qualification "in general" is included because except in the laboratory, oil will usually be influenced by natural forces such as wind and waves. Although many informative papers have been published on the behaviour and fate of oil at sea (for example, Wardley Smith, J., "The Distribution of Oil and Behaviour of Oil Spills," in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 65-71), the reader is particularly directed to the work of Mr. P.G. Jeffrey of the U.K. Warren Spring Laboratory, who has conducted extensive research into the behaviour of oil at sea. See, for example, Jeffrey, P., "Large Scale Experiments on the Spreading of Oil at Sea and its Disappearance by Natural Factors," *Proceedings of Conference*

forces and the prevailing winds are westerly.[173] It therefore seems quite possible that oil discharged in the area of U.K. and Norwegian activity could reach coastlines of Denmark or Norway.[174]

Natural forces also change the oil itself. Refined products and the lighter fractions of crude oil tend to evaporate quickly, leaving the heavier residues.[175] However, despite their propensity to evaporate quickly, lighter oils and refined products enter into solution with sea water far more easily than persistent oils.

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on Prevention and Control of Oil Spills, American Petroleum Institute, Washington, D.C. (1973).

173. Emulsified oil from the *Torrey Canyon* disaster stayed on the sea for some 24 days, travelling about 230 miles altogether and covering a distance of 130 miles. The area affected by *Torrey Canyon* oil is therefore some evidence that a spill near the production wells in the North Sea could reach land. It is about 100 miles from the Forties field to Peterhead and approximately 160 miles to the coast of Norway. U.K. Royal Commission on Environmental Pollution, *op. cit.* in footnote 25, at p. 45.

174. White, I.L., (*et al.*),*op. cit.* in footnote 108, at p. 121.

175. In the North Sea, it has been estimated that about 20 per cent. of an average crude oil will evaporate in a day, the lighter parts disappearing within a few hours. Fulleylove, R., *op. cit.* in footnote 128, at p. 6; citing *Oil Pollution of the Sea and Shore*, a Warren Spring Laboratory Booklet (1972). The U.K. Department of the Environment estimate that up to 40 per cent. of the light North Sea crudes may be evaporated within one day (*op. cit.* in footnote 30 at para. 8.3, p. 6). But one of the leading authorities on effects wrought by marine oil spills has cautioned that the *Dona Marika* petrol tanker accident has shown that "predictions about 'non-persistent' oils based on small scale experiments may be misleading. In this case, about 3000 tons of petrol were spilt into a bay during high winds and heavy seas, and under these conditions water-in-petrol emulsions were formed and evaporation rates were subsequently lower than predicted. A combination of the high toxicity of the petrol and the reduced evaporation rate resulted in large numbers of molluscs being affected, the detachment of most of the limpets in the bay being particularly noticeable." Baker, J., "Effects on Shore Life and Amenities," in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 85-90, at p.88.

Furthermore, they are extremely toxic.[176] Toxicity plus solubility combine to make the so-called "white oils"[177] a great threat to marine life in certain situations: a spill may be dispersed throughout the water column (instead of merely floating on the surface) by the action of wind and waves before it has completely evaporated, thus reaching a wide range of marine organisms. Because of its toxicity, if a spill of light or refined petroleum occurs in coastal waters rich in marine life, the destruction may be swift and complete.[178] One authority has suggested that, because of their destructive properties, "there seems little that can be done except to treat refined petroleum products as dangerous cargoes and handle them with appropriate care."[179]

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176. Clark, R., *op. cit.* in footnote 167, at p. 70.

177. See also the discussion of "white oils" in connection with the 1973 IMCO Convention, below at p. 160.

178. The destruction of marine life was severe in three well-known cases of light oil spills. The *Dona Marika* has been mentioned (footnote 175). The *Tampico Maru*, with a cargo of 55,200 barrels of diesel oil grounded in a small cove in Baja California in 1957. All forms of marine life were affected; recovery to pre-spill conditions was estimated to be six years, although sublethal effects may have persisted beyond this time. The "West Falmouth" spill, as it is generally termed because of its location, involved the oil barge *Florida* which grounded near that harbour in Massachusetts. Approximately 4,500 barrels of No. 2 fuel oil was estimated to have been lost. The effects were extreme: "Trawls made in 10 feet of water soon after the spill showed that 95 per cent. of the animals collected were dead." Four years after the incident some effects were still detectable. U.S. Congress, Office of Technology Assessment, *op. cit.* in footnote 23 at pp. 34-35; citing Michael, Von Roalte and Brown, "Long-Term Effects of an Oil Spill at West Falmouth, Mass.," 1975 Conference on Prevention and Control of Oil Pollution, American Petroleum Institute (1975).

179. Clark, R., *op. cit.* in footnote 167, at p. 70. Professor Clark acknowledges that this is an unsatisfactory solution.

Heavier oils which remain on the surface may be affected by a number of processes--none of which is well understood. The oil slick has a tendency to form a stable water/oil emulsion, the well-known "chocolate mousse" which enhances the cohesiveness of slicks and therefore their persistence.[180] A small quantity of oil may be removed by photo-oxidation and auto-oxidation, processes which are catalysed by sunlight and by salts present in sea water.[181] Bacterial oxidation may also remove some of the remaining oil, although this varies with the dilution of the oil in water and with heat, the latter factor being in large part responsible for the extremely slow oxidation of oil spilled in Arctic areas.[182] Oil may also be removed from the surface of the sea as a result of adsorption on solid particles: the resultant tarry lumps then sink, but little is known of what happens

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180. The emulsion can contain up to 70 per cent. water, thus greatly increasing the mass and aggravating clean up problems. Wardley Smith, J., *op. cit.* in footnote 172, at p. 68. The particular characteristics of North Sea crudes which may affect emulsions with seawater are being studied by the U.K. Warren Spring Laboratory. However, pending more complete findings, the Department of the Environment has concluded that North Sea crudes are likely to behave in the same manner as the Kuwait crude which formed an oil-seawater emulsion following the *Torrey Canyon* grounding (*op. cit.* in footnote 30, at para. 8.4, p. 6, and Appendix H).

181. Schachter, O. and Serwer, D., "Marine Pollution Problems and Remedies," 65 *American Journal of International Law* 84-111 (1971), at p. 89.

182. "Below 10 degrees centigrade, bacterial oxidation is very slow, and oil spilled in Arctic areas may last as long as 50 years." *Ibid.* The "special characteristics" of the Arctic and other areas have been adduced to support unilateral claims to extensive coastal jurisdiction (for example, the Canadian Arctic Waters Pollution Prevention Act), and has been mooted in various versions at UNCLOS III (for example, Article 21(5) of the Committee III Revised Informal Single Negotiating Text (A/CONF.62/WP.8/Rev./Part III, 6 May 1976). See below, p. 201.

to them then or the effect they may have on the marine environment.[183] It is clear, however, that some tarry lumps, whether from submarine or surface pathways, may travel great distances and eventually be washed up on the beach.

b) the effect of oil on man and his environment

There is general scientific agreement that the primary environmental injury caused by sporadic discharges of crude oil is damage to seabirds,[184] although a great deal of research into possible effects on plankton, larvae, and various micro-organisms is in progress. Shelton has concluded that an oil spill in the North Sea is not likely to affect fish stocks, although economic loss could result from the fouling of fishing gear and the temporary tainting of fish and shellfish.[185] Scientists are less confident that spills of toxic petroleum

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183. *Ibid.* Adsorption is more likely to occur near the coast or in shipping lanes. Thor Heyerdahl's observations of tarry lumps from the *Ra* all across the Atlantic have been discounted by Wardley Smith who notes that both the *Ra* and the lumps were drifting. Wardley Smith, J., *op. cit.* in footnote 172, at p. 68. A study on tar balls in the North Sea (in Norwegian) has been published by Gary B. Smith of the Norwegian Fisheries Directorate: "Oljeklumper i farvannene Utenfor" Norge (1975).

184. See, for example, Moore, S. (*et al.*), "Ecological Aspects of Offshore Exploration and Exploitation," a paper delivered at the Offshore North Sea Technological Conference and Exhibition, Stavanger, 3-6 September 1974, p. 20; Croxall, J., "The Effect of Oil on Nature Conservation, Especially Birds," in Cole, H. (ed.), *op. cit.* in footnote 46, at pp. 93-101. In theory, species which aggregate and frequent the areas most likely to be subject to oil spills should be at greatest risk, but Croxall has found that although they are frequent casualties, their higher reproductive rate compensates for deaths due to oil. See also, U.K. Royal Commission on Environmental Pollution, *op. cit.* in footnote 25, at para. 134, p. 48.

185. Shelton, R., *op. cit.* in footnote 156, at p. 76; citing Korringa, P., 17 *Helgolander wiss. Meeresunters* 126-40 (1968), Simpson, A., 2 *Field Studies* 91-98 (supplement), (1968), and Cole, H., *Oceanology International* (1969).

products or continuing discharges of any oils can be so easily dismissed.

Laboratory experiments have demonstrated that toxic fractions of oil on the surface of the open sea can inhibit the reproduction and growth of planktonic animals and plants.[186] This is an important area of research, because plankton is the base of the pyramid of marine life,[187] and produces most of the world's oxygen as well.[188] Further research is needed, however, particularly into sublethal effects and to determine what differences may exist between risks as assessed in the laboratory and those which will be produced by actual activities at sea.[189]

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186. See, for example, Johannessen, K., "Effects of Seawater Extract of Ekofisk Oil on Hatching Success of Barents Sea Capelin," a paper presented to the ICES Workshop on "Hydrocarbons in the Marine Environment," Aberdeen, 1976.

187. In the North Atlantic, 1000 pounds of phytoplankton produces:
100 pounds of zooplankton or shellfish
50 pounds of anchovies and other small fish
10 pounds of smaller carnivores
1 pound of the carnivores harvested by man.
U.S. Council on Environmental Quality (U.S.C.E.Q.), *Ocean Dumping, a National Policy* (1970), p. 12; citing Ketchum, B.H., "Biological Implications of Global Marine Pollution," in Singer, S.F. (ed.), *Global Effects of Environmental Pollution* (1970), pp. 190-94.

188. It has been estimated that phytoplankton produce about 70 per cent. of the earth's oxygen. Schachter, O. and Serwer, D., *op. cit.* in footnote 181, at p. 87. Suggestions that destruction of plankton could cause a global oxygen shortage appear to have been refuted, but even if this is the case, the undoubted dependence of man on marine life should provide ample reason to treat the oceans with an abundance of caution. Knauss, J., *op. cit.* in footnote 11, at p. 327; citing Broecker, W., "Man's Oxygen Reserves," 173 *Science* 1537-38 (1970).

189. Among the many inadequacies of laboratory experimentation is the necessary limitation of attention to one small facet of the ecosystem and the impossibility of simulating the multiple natural occurrences which might coincide with a discharge and

The effects of chronic discharges of hydrocarbons on marine organisms is also a function of the toxicity of the effluent, opportunity for dilution in the sea, and a complex of other variables. Continuous discharges of effluent into the same area occur primarily in connection with refining and production operations, although oil spills associated with loading and unloading cargo may approach the chronic level.[190] Oil in effluent discharged from production platforms is a particular source of concern in respect of North Sea petroleum development. As mentioned earlier, oily-water separators are still primitive in that a relatively large amount of oil remains in the discharged effluent.[191] The U.K. Department of the Environment has concluded that present technology can achieve an average oil effluent concentration of 30-40 ppm for production platforms, yet they concede that a continuous exposure to this solution can be expected to cause mortality to several classes of organisms.[192] Moreover, the same Report

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so alter the expected effects. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at pp. 32, 35; citing Straughan, D. (ed.), "Biological and Oceanographical Survey of the Santa Barbara Channel Oil Spill, 1969-1970," *Biology and Bacteriology*, Vol. I, University of Southern California (1971).

190. In the Caspian Sea offshore oil development, natural seepage, waste waters from refineries and the petro-chemical industry, vessel-source discharges, and sewage have combined to drastically reduce all marine life in the area. Although the Caspian does not enjoy the same flushing action as does the North Sea, "it cannot be doubted that the exploitation of the North Sea oilfield exposes it to new dangers." Clark, R., *op. cit.* in footnote 167, at pp. 60-61.

191. This is a major impediment to acceptance of the 1973 IMCO Convention on the Prevention of Pollution from Ships. See below, p. 160.

192. U.K. Department of the Environment, *op. cit.* in footnote 45, at pp. 7 (Table 3) and 22; Moore, S. (*et al.*), *op. cit.* in footnote 184, at pp. 6, 20.

points out that the soluble, toxic fractions are unlikely to be removed by platform oily water separation equipment. Available data are insufficient to permit generalizations on the effect of North Sea production platforms on marine life. However, the information that has been accumulated suggests that as effluent discharged from production platforms can be harmful to marine life, caution should be exercised in platform placement so that, to the extent possible, the mixture can be diluted in the sea before it can affect highly aggregated or otherwise susceptible species.[193]

Early concern with marine oil pollution was directed at the problem of begrimed beaches and may well have been more the result of attention to amenity and economic interests than a desire to protect the environment.[194] Nevertheless, it remains the case that oil spilled closer to shore is more likely to cause a greater amount of damage than had it been discharged in mid-ocean, and furthermore, that such potential damage is more likely to involve all three interests. As in the cases of toxic and chronic discharges, the impact of hydrocarbons which reach the beach on amenity, economic, and environmental interests depends on many variables, chief among which are the type of oil and the type of beach.

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193. Mr. Lars Foeyn and Mr. Grim Berge, of the Norwegian Institute of Marine Research presented a paper at the Offshore North Sea Conference in Stavanger, on 21 September 1976, in which they reported that minute amounts of oil could interfere with salmon sensory organs and thus prevent their return to rivers to spawn. *The Scotsman*, 22 September 1976, p. 11. See also, Moore, S. (*et al.*), *op. cit.* in footnote 184, at p. 20.

194. See the discussion of the 1954 IMCO Convention, below at p. 151.

Rocky beaches appear to be little affected by oil discharges.[195] The natural washing action of the sea minimises environmental damage, although oil adhering to rocks above the splash zone may persist for some time, possibly impairing human enjoyment of (and attraction to) a formerly popular area of great natural beauty.

Sandy beaches are the most usual type of amenity beach, and as such, may well be severely affected by oil pollution. Both residents and tourists may suffer amenity loss, and each may incur economic loss as well, the former losing tourist income and the holiday-maker perhaps having to spend unanticipated sums to change his plans.

Sandy beaches also tend to absorb oil, and it may persist below the surface for years.[196] It has been suggested that as sandy beaches are "seldom of fisheries or marine conservation interest, where bird life is unaffected the ecological effects can be tolerated."[197] Although it is recognised that sandy beaches are less likely to be as rich in marine life as rocky or mud beaches, it is nonetheless a cause for concern that the Department of the Environment appear so ready to condone a rape of nature. It is conceded that economic limitations preclude complete protection and that perfect restoration is not possible. It is submitted, however, that every effort should be made to prevent oil from becoming buried on sandy beaches and that caution must be exercised to ensure that "tolerable" does not become synonymous with "expendable."

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195. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 8.19, p. 80.

196. *Ibid.*, at para. 8.20, p. 80.

197. *Ibid.*

Oil is most likely to cause damage to estuaries because these areas shelter abundant and varied organisms. Natural cleaning action is apt to be limited and oil which reaches the shore is readily absorbed by the fine sand and mud flats which often comprise the sea/land interface.[198] Plants and animals affected by the oil may in turn endanger other organisms--including man. It is well known that shellfish in particular can become tainted from relatively small amounts of oil in the water which they pass over their gills. Although the taint is lost if the water clears and few tainted shellfish are likely to be consumed (at least in an unaltered state), it has been pointed out that some petroleum fractions contain known or suspected carcinogens.[199] This is yet another situation in which ignorance of the probabilities of possibly enormous risks dictates prudence.[200]

Salt marshes usually recover well from occasional oil spills, but chronic pollution may result in their destruction.[201] Salt marsh vegetation is important in erosion control in estuarine creeks, as

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198. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 8.21, p. 80.

199. Nelson Smith, A., in Cole, H. (ed.), *op. cit.* in footnote 46, pp. 105-111, at p. 110 (numerous citations omitted).

200. Caution is also advisable in view of the well-known tendency of biota to concentrate substances from a few hundred to several hundred thousand times the concentration in the surrounding environment. U.S.C.E.Q., *op. cit.* in footnote 187, at p. 12 (several citations omitted).

201. *The Times,* 27 April 1973, p. 21. The Nature-Times News Service reported that Dr. J.M. Baker had conducted experiments on experimental plots over a period of five years. The results were published in *Environmental Pollution* (4, 223; 1973).

well as providing food for fish and birds.[202] Destruction of salt marshes can therefore have "ripple effects" which extend beyond the species and locality originally polluted.

c) mitigating the consequences of oil spills

A number of techniques have been developed to contain and/or remove oil spills. The choice of methods depends on a number of factors, particularly weather and sea conditions. It has been suggested that because of these considerations,

> "most of the remedial action and cleanup equipment which is highly suitable for use 99% of the time in the Gulf of Mexico would only operate 20% of the time in the Celtic or North Seas."[203]

It may be decided that, on balance, the cost of remedial measures may not justify the effort, or that the harm which is likely to occur from efforts to remove or disperse the spill may exceed the probable benefits. In such case, no action will be taken.[204] Nevertheless, when oil at sea threatens the coast, it is usually desirable to clean it up, for beach cleaning is very labour-intensive and therefore it is far more expensive than dealing with an oil spill at sea. A great deal has been written on the subject of oil spill cleanup; consequently the paragraphs below are intended only to give the reader a brief introduction to present and future methods of mitigating the consequences of marine oil spills and to illustrate the influence of technology on law.

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202. Nelson Smith, A., *op. cit.* in footnote 199, at p. 107.

203. Wardley Smith, J., *op. cit.* in footnote 76, at p. 6.

204. *Ibid.*, at p. 12; U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 2.16, p. 10.

i) dispersants

The British Government believe that dispersants are at present the most effective method of combatting oil spills at sea.[205] The effectiveness of dispersants depends upon distributing an adequate amount of the solution on the slick, and then mixing the dispersant with the oil.[206] This is usually done by spraying from small boats.[207] Dispersant is loaded on sprayer-equipped vessels in concentrate form and mixed with seawater prior to use, thus permitting a much greater volume of solution to be sprayed than were it pre-mixed.[208] The primary advantage of dispersants in the North Sea is that they can be used effectively even when seas are rough and winds are high. The objection that dispersants used following the *Torrey Canyon* grounding caused widespread destruction of marine life because of their toxicity has, in the U.K. view, been overcome.[209] However, even the new

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205. U.K. Department of Trade, *op. cit.* in footnote 33, at p. 9; U.K. Department of the Environment, *op. cit.* in footnote 30, at paras. 9.7-9.16, pp. 85-88.

206. Fulleylove, R., *op. cit.* in footnote 128, at p. 15. The dispersant does not itself remove the oil, but by breaking the slick up into small droplets, encourages the natural processes of degradation. *Ibid.*, at p. 16; U.K. Department of Trade, *op. cit.* in footnote 33, at p. 10.

207. The U.K. has non-contractual arrangements with a number of small boat owners to supply vessels for spraying, and spray kits are stocked at a number of strategic points in the U.K. The Department of the Environment Report has questioned whether this arrangement will ensure sufficient vessels should the need for them arise, and has suggested that the Department of Trade investigate the possibility of placing some boats on retainers to guarantee their instant availability (*op. cit.* in footnote 30, at paras. 10.13 and 11.20, pp. 99 and 112).

208. One barrel of concentrate will cover the same area as 10 barrels of pre-mixed dispersant. Fulleylove, R., *op. cit.* in footnote 89, at p. 16.

209. U.K. Department of Trade, *op. cit.* in footnote 33, at p. 9. A

dispersants retain some degree of toxicity, and it may be that in sheltered coastal waters mechanical means of oil removal or containment would prove more satisfactory from an environmental protection point of view.[210] Moreover, the value of the oil itself may increasingly be a factor in favour of oil recovery as technology permits this process to become more efficient.

ii) mechanical oil containment and pick-up devices

The Norwegians favour using booms to contain oil spilled at sea, believing that on balance, the environment is likely to be better protected by a less effective device that is non-toxic than by dispersants which are potentially harmful to marine life.[211] Booms

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table depicting the reduction in dispersant toxicity is reproduced below:

Vintage	Dispersant	Toxicity*
1960s	BP 1002	3-10
	Slickgone 1	3-10
Late 1960s	Corexit 8666	3,000
1970s	BP 1100X	10,000 or more

*Toxicity is the concentration in ppm at which 50% of the animals (brown shrimp) die in 48 hours.

Source: U.K. Ministry of Agriculture, Fisheries and Food, "The Toxicity of 140 Substances to the Brown Shrimp and Other Marine Animals," (J.E. Portmann and K.W. Wilson), Shellfish Information Leaflet No. 22, December 1971; cited in White, I.L. (*et al.*), *op. cit.* in footnote 108, at p. 128 (Table 12).

210. Any dispersant can cause problems on sandy, muddy and saltmarsh beaches because finely dispersed oil can penetrate deeply into the sediments, and may remain buried for years. Baker, J., *op. cit.* in footnote 175, at p. 188.

211. The main argument against the use of dispersants is that the practice may just be dispersing hydrocarbons throughout the marine environment, with unknown effects. National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 106. The contrasting British and Norwegian views are reflected in their legislation and provide an interesting example of the influence of science and technology upon law.

are simply floating fences; usually they are long, floating tubes to which are attached "skirts" which extend the barrier beneath the water. A number of booms may be arranged in a pattern to contain oil in an area or to keep it out.[212] Although the primary objection to booms has been that they simply cannot fence oil in or out during rough weather,[213] there are other criticisms as well, including problems with arranging and mooring the fence.[214] and the excessive time needed to transport the bulky equipment.[215] It may also present a fire danger to confine petroleum around a leaking well or tanker; therefore, it may be that booms are best employed as defensive devices to keep oil out (for example, of harbours) rather than to confine it. Finally, it must not be forgotten that even the successful use of booms still leaves the problem of oil removal to be solved, a task which takes time and requires relatively calm seas.

A second method to contain oil on the surface is by using chemical "herders." These agents are sprayed on the sea and compete with the oil for free water surface.[216] Herders are said not to harm the environment; thus, they offer the advantages of boom containment

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212. Booms are normally arranged in a "U"-shaped trap, but this may be impossible if the currents are strong, and alternatively, booms may be arrayed so as to deflect oil to a collection point. Fulleylove, R., *op. cit.* in footnote 89, at p. 14.

213. *Ibid.*, at p. 13.

214. *Ibid.*, at p. 14.

215. This shortcoming has been rectified to some extent by the recent U.S. Coast Guard development of a lightweight boom system which can be airlifted to the oil spill site.

216. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 9.21, p. 89.

without attendant problems of transport and arrangement. The primary disadvantage of booms is retained, however: herders do not work well in rough weather. Their effectiveness is also reduced if the oil has previously been treated with dispersants or if it is thick and waxy.[217]

Oil may be removed from the surface of the water by mechanical devices, by the introduction of absorbent materials onto the slick which soak up oil and are then removed, or by sinking agents to which the oil adheres.

"Skimmers" are mechanical oil pick-up devices which employ a system of discs or a belt to which oil adheres and is then scraped off; an alternative concept uses centrifugal force to thicken the oil to facilitate collection.[218] The effectiveness of skimmers in the North Sea is limited by their inability to remove oil efficiently in rough weather.[219] A further consideration is the high investment required: The cost of a typical disc skimmer is about £25,000.[220]

Absorbent materials, such as straw or artificial substances, present no risk to the environment and are not inhibited by rough weather, although high seas and winds can exacerbate the already serious problem of the time necessary to collect a large volume of oil-soaked absorbents. Disposal is also a problem: burning or sinking would avoid the problem of collection, but there are practical

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217. U.K. Department of the Environment, *op. cit.* in footnote 30, at para. 9.21, p. 89.

218. Fulleylove, R., *op. cit.* in footnote 89, at p. 14.

219. Disc skimmers can work in moderately high seas and so may be of some use in the North Sea. *Ibid.*, pp. 14-15.

220. U.K. Department of the Environment, *op. cit.* in footnote 30, para. 9.23, p. 90.

problems (crude oil can be difficult to burn completely, absorbents float) and the transfer of pollution from the sea surface to atmosphere or seabed is an unsatisfactory solution and is possibly contrary to international customary law.[221] Disposal on shore necessitates transportation from spill site to a location where the material can be used as land fill or otherwise utilised. Transportation and materials handling costs are therefore a consideration.[222]

Sinking agents, such as powdered chalk or treated sand, can be used to remove oil from the surface of the sea, but the sunken oil may be harmful to benthic animals and can also foul nets.[223] Sunken oil does not decompose as quickly as oil which is exposed to sunlight and atmosphere; moreover, it may be carried by bottom currents far beyond the original site of the sinking. These drawbacks suggest

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221. For example, Principle 21 of the Declaration of the United Nations Conference on the Human Environment states that States have "the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction." Article 4(2) of the Committee III Revised Single Negotiating Text (developed at the Third United Nations Conference on the Law of the Sea) is a similar provision, and Article 5 of that document provides that "(i)n taking measures to prevent, reduce or control pollution of the marine environment, States shall so act as not to transfer, directly or indirectly, damage or hazards from one area to another or transform one type of pollution into another." See the discussion of emerging international customary law, below at p. 96.

222. Fulleylove, R., *op. cit.* in footnote 89, at p. 13. Dumping sites on land can be difficult to find. This is one reason dumping at sea is increasing. The Oslo Dumping Convention addresses this problem in a provision which requires Parties to apply that instrument so as to prevent diversion of ocean dumping to other areas. See below, p. 205.

223. Shelton, R., *op. cit.* in footnote 156, at p. 76 (numerous citations omitted). Dr. Shelton observes, "Of all the methods available for alleviating the effects of oil pollution on

that sinking agents should be used only after a careful weighing of alternative means of oil clearance.[224]

iii) beach cleaning techniques

These techniques are similar to those employed for oil slicks at sea, but are usually far more labour-intensive. On sandy beaches, oil is usually removed by shovel manually; the use of power shovels even where logistics permit this action may result in more environmental damage than protection.[225] Absorbents are frequently used, small armies of volunteers being necessary to collect the oil-soaked materials. Dispersants can also be used to break up oil and, in the case of rocky beaches, this may be the only alternative to leaving the oil to degrade naturally. The latter alternative should be carefully considered, however, because even modern dispersants can cause injury to the delicate organisms which are found between the tides.[226]

2. The effect of placing installations offshore

One writer has concluded, after studying the problems associated with oil production in the Gulf of Mexico, that

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tourist beaches and diving birds, sinking is the least acceptable to fisheries interests. Unfortunately, it is still probably the only method of dealing quickly with very large spillages." *Ibid.*

224. A further consideration is the availability of a suction dredger to fully utilise the potential of this method to quickly remove large quantities of oil from the sea surface. Wardley Smith, J., replying to a question in the discussion following his paper cited in footnote 172, at p. 73.

225. Baker, J., *op. cit.* in footnote 175, at p. 88. Dr. Baker concludes that drastic removal techniques "such as bulldozing, burning, and cutting of oiled vegetation are all more destructive biologically than just leaving the oil, except where thick, persistent layers of oil or mousse have a physically smothering effect." *Ibid.*

226. *Ibid.*

> "The significant conflicts between oil production and the marine environment are not the apparently obvious ones--oil slicks, spills and major accidents--but rather problems due to dredging, soil displacement, silting, navigational restrictions and underwater obstructions."[227]

The effects caused by the actual placement of offshore installations on or into the seabed is a new and little-researched problem. Little is known of the effects such placement has on currents, fish migrations, or benthic organisms, to cite but three examples. Even seabed trenching and dredging for pipeline burial and channel deepening--obviously activities which disturb the pre-existing order--remain inadequately researched. It is well known that dredging can damage nursery areas, but further research is needed in order to ascertain the true cost of mineral extraction from the sea.

3. The effect of oil-related debris

Debris dumped from offshore installations or associated vessels has damaged fishing gear and is the subject of discussions between fishermen and the oil industry.[228] Such debris, although possibly containing traces of oil or chemicals, is for the most part inert, and is not thought to pose significant danger to marine life.[229]

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227. St. Amat, L., *Journal of Petroleum Technology* (1972), at p. 385. The quotation is a paraphrase of Dr. St. Amat's findings in Lester, T. and Beynon, L., *op. cit.* in footnote 124, at p. 24. This is also the conclusion of the National Academy of Sciences, *Petroleum in the Marine Environment*, Washington, D.C. (1975), at p. 89, which also points out the effects on wetlands and estuaries.

228. See below, pp. 258-262.

229. However, some inert material, such as mud, can detrimentally affect marine life when discharged in high concentrations. Effects include interference with photosynthesis, feeding, and gill blockage. White, I.C., *op. cit.* in footnote 106, at p. 5. The National Academy of Sciences, *Assessing Potential Ocean Pollutants*, Washington, D.C. (1975), has estimated daily litter from 26 mobile rigs and 10 producing wells in the North Sea at 0.5 (10^6 kg)/year.

4. The effect of chemicals

Little is known about the effects of chemicals upon the marine environment. This is especially true in the case of small amounts of toxic substances introduced into the same area on a continuing basis as can occur with installation discharges. Bactericides, for example formalin and pentachlorophenol, are frequently added to drilling muds.[230] If the mud is then discharged (or accidently lost) from the drilling rig, these toxic chemicals could damage marine life, the extent of the injury depending upon the circumstances, such as rig location, etc. Evidence from the laboratory suggests that such chemicals could be damaging,[231] but this writer has not discovered evidence of concerted investigation into the possible effects of such chemicals under actual conditions at sea.

C. Conclusion

Two fundamental points of relevance to the control of marine pollution in the North Sea have emerged from this description of its causes and effects. First, it is apparent that knowledge of effects

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Assumptions for rigs: 50-man crews, 365 day year, 1.07 kg/person/day. Assumptions for production wells: 30 man-days/year, 0.8 kg/person/day. Table 8-11, p. 420. The NAS had earlier concluded that litter has little effect on marine life, the primary problem occurring when it was washed up on beaches (p. 406).

230. Shelton, R., *op. cit.* in footnote 156, at p. 76.

231. Shelton says only that "this would not lead to a 'significant' depression in total benthic or fish production," but he admits that "it could taint the flesh of fish living on the benthos and thus reduce their market acceptability." *Ibid.* It is submitted that too little is known about the long-term effects of such chemicals on human consumers (especially those who influenced

wrought by man's activities in the marine environment is woefully inadequate. This is particularly true in the case of long-term effects; for example, we simply do not know with certainty how chronic discharges of oily water from production platforms may be altering the web of marine life. Professor Clark's warning that because many life systems are slow to manifest the effects of pollution, by the time that damage becomes evident it may be irreversible on any human time scale is clearly to be heeded. And his suggestion that the potential consequences of man's activities may require legislation which precedes definite knowledge of danger is of particular significance.[232]

A second point which emerges from this description of the causes and effects of marine pollution is that the law is also dependent upon technology. A law which demands behaviour which is technologically impossible (for example, oily-water discharge standards) for the present is of little value in environmental protection.[233] The crucial point is therefore tailoring law to technology--and encouraging technological advances. The legislator must know what technology is available, the engineer must know what is needed.[234] It is clear that interdisciplinary communication is a prerequisite to an effective legal regime of marine pollution control.

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by cultural or economic considerations depend upon affected benthic organisms as a source of protein) to entrust their safety to their sense of taste, a perception easily misled.

232. Clark, R., *op. cit.* in footnote 167, at p. 71.

233. See the discussion of the 1973 IMCO Convention, below at p. 160.

234. Each must also consider other disciplines as well, for example, science, economics, politics, sociology.

CHAPTER THREE

INTERNATIONAL LAW REGULATING POLLUTION FROM SEABED OPERATIONS

A. Introduction

The present international law of marine pollution control resembles an uncompleted mosaic created by a group of novices: individual tiles lie isolated or are heaped randomly in an unplanned work which may someday contain no gaps--but which few would consider the meaningful expression of a plan. So it is with the present international legal regime which is not the result of design, but has evolved according to the crisis and the political climate of the moment. A new approach is needed.

In this and the following chapter (which is concerned with liability), the present international law relevant to marine pollution is examined. Most of the present law of marine pollution control is the result of inter-Governmental agreement formalised by treaty. Custom as a source of law is also relevant, however, and this chapter will begin with an examination of the present and emerging customary law of marine pollution control.

1. International customary law

The general principles governing the use of the sea which bind States because such principles are regarded as "customary" are general indeed. Such principles include:

1. Freedom of the high seas.
2. Reasonable regard for the rights of others.
3. Non-abuse of rights.
4. A prohibition on using property in a manner which

may injure others.[1]

To these should be added the more recent doctrine that the coastal State has "inherent" sovereign rights over the natural resources of its continental shelf.[2] These rules of international customary law are important in their own right, but they are also interesting because, as Professor E.D. Brown has observed, "the more detailed conventional rules are very largely but the development of the general rules provided by international customary law."[3] Indeed, as the relevant British and Norwegian law is to a great extent predicated upon these conventional rules, international customary law is reflected in municipal law as well.[4] Evidence of customary law rules may be found in the 1958 Geneva Convention on the High Seas (which purports to codify customary law),[5] the decisions of international tribunals, and the opinions of qualified writers.[6]

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1. Hardy, M., "International Control of Marine Pollution," 11 *Natural Resources Journal*, 296-348 (1971), at p. 310.

2. *North Sea Continental Shelf Cases, I.C.J. Reports*, para.19 (1969).

3. Brown, E.D., *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971), p. 127.

4. See Chapters Six to Nine.

5. See the High Seas Convention, Preamble. There is some question as to what extent the Convention actually does codify customary law. For example, Article 5 requires a "genuine link" between the flag State and its vessels--a provision clearly directed at flag of convenience States and which is ignored in practice. Signed 29 April 1958, in force 30 September 1962; Cmnd. 1929 (1963). The U.K. is and Norway is not a party to this Convention.

6. Article 38(1)(d) of the Statute of the International Court of Justice provides that judicial decisions and teachings of qualified publicists are a "subsidiary means" for the determination by the I.C.J. of the rules of law.

a) the High Seas Convention

Freedom of the seas has historically included the freedom to navigate and to fish. Newer freedoms reflect man's technical progress: freedom to lay submarine cables and pipelines are both specified by the High Seas Convention Article 2 in an illustrative list of high seas freedoms.

The freedoms of the sea in this or any list are not absolute. The rules of customary law already referred to - reasonable regard for the rights of others, non-abuse of rights, and a prohibition on using property in a manner which may injure others - are different aspects of the same concept: a right may be limited when it infringes the right of another. Thus, Article 24 of the High Seas Convention requires that

> "Every State shall draw up regulations to prevent pollution of the seas by the discharge of oil from ships or pipelines or resulting from the exploitation and exploration of the seabed and its subsoil, taking account of existing treaty provisions on the subject."

The doctrine of reasonable use has been expressly affirmed by the International Court of Justice (hereafter, I.C.J.) in the recent *Fisheries Jurisdiction Case* wherein the majority observed that even so fundamental a freedom as fishing must be exercised with "reasonable regard to the interests of other States."[7]

b) decisions of international tribunals

Although there is as yet no significant body of case law regarding marine pollution,[8] four decisions which limited State rights are

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7. *Fisheries Jurisdiction Case, I.C.J. Reports*, para. 10 (1974).

8. Hardy, M., "Offshore Development and Marine Pollution," 1 *Ocean Development and International Law*, 239-273 (1973), at p. 246.

relevant.

i) the *Trail Smelter Arbitration*[9]

The Tribunal was asked to decide whether, if a Canadian smelter were found to have caused damage in the U.S., the smelter should be required to stop causing such damage. The Tribunal found that principles of international law precluded any State from using or permitting its territory to be used in a way which would cause injury by fumes to another State or the persons or property therein, "when the case is of serious consequence and the injury is established by clear and convincing evidence." Canada was therefore under an international legal duty to ensure that the damage complained of was halted.[10]

The *Trail Smelter Arbitration* may have lost some of its force because, although the holding applied to a narrowly defined set of circumstances, it has been invoked to support a variety of far more general propositions.[11] However, provided that the other requirements are present, the fact that an activity is occurring outside the

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Hardy points out that the absence of case law is relevant not only to the subject matter, but in regard to questions of foreseeability of harm and standard of proof required, "both issues which would be of crucial importance in any inter-State dispute regarding marine pollution arising out of offshore exploitation." *Ibid.*

9. *Trail Smelter Arbitration* (United States v. Canada), 3 *Reports of International Arbitration Awards* 1905 (1941); 35 *American Journal of International Law* 684-736 (1941).

10. Second *op. cit.* in footnote 9, at pp. 716-717. To avoid such damage, the operations of the smelter were made subject to a regime set out in the Arbitral Decision, *ibid.*, at pp. 717 *et seq.*

11. For example, *Trail Smelter* has been cited to support the notion of coastal State high seas "custodianship" on behalf of the international community, specificially with reference to the Canadian Arctic Waters Pollution Prevention Act. The flaw in this

territory of a State, yet under its jurisdiction, is not generally thought to pose an obstacle to application of the principle. Thus, in the words of Professor Fleischer,

> "it is difficult to find any convincing material to support a conclusion that the State's obligation to control vessels under its registry is in principle different from the obligation to control its territory (even if the fiction of regarding a ship as *territoire flottant* is not generally accepted)."[12]

As another writer has observed, if a State is forbidden by the *Trail Smelter* principle from using its *own* territory in a way which causes injury in another State, *a fortiori* the acting State should be prohibited from so using the high seas in which it has no property interest.[13]

A similar argument by yet another authority yields a similar conclusion in the case of offshore installations:

> "If the Continental Shelf is not the 'territory' of the coastal State, it is at least 'within its jurisdiction' in relation to exploration and exploitation of natural resources."[14]

ii) the *Corfu Channel Case*[15]

In this case the I.C.J. was asked to decide whether Albania was

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argument, as pointed out by Professor Jennings, is that the arbitral award "concerned the duty owed to a territorial neighbour and not a duty owed either to oneself or to mankind in general." Jennings, R., "A Changing International Law of the Sea," 31 *Cambridge Law Review* 32-49 (1972B), at p. 44 (footnote 20).

12. Fleischer, C., "Pollution from Seaborne Sources," in Churchill, R. (*et al.*) (eds.), *New Directions in the Law of the Sea*, Vol. III, British Institute of International and Comparative Law, London, (1973), pp. 78-102, at p. 81.

13. Green, L.C., "International Law and Canada's Anti-Pollution Legislation," 50 *Oregon Law Review* 462-490 (1971), at p. 478.

14. Brown, E.D., *op. cit.* in footnote 3, at p. 182.

15. *Corfu Channel Case, I.C.J. Reports*, p. 4 (1949).

responsible under international law for damage caused to British vessels by mines in Albanian waters. The Court decided that "certain general and well-recognised principles" applied, including every State's "obligation not to allow knowingly its territory to be used for acts contrary to the rights of other States." Albania's "grave omissions" of warning to the British of impending disaster resulted in her international responsibility.[16] The *Corfu Channel Case* is of limited value, however, because the Court held only that Albania had a duty to warn of dangers in her territory of which she had (actual or imputed) knowledge--not that the duty extended to preventing such dangers.

iii) the *Lac Lanoux Arbitration*[17]

This arbitration resulted from a dispute between France and Spain over the former's plan to divert waters draining into Spain, and to provide other water resources as compensation. The Tribunal found that, although France was not free to ignore Spanish interests in exercising her own rights, in this case Spanish interests had been sufficiently considered. The *Lac Lanoux Arbitration* is evidence that the general principle *sic utere tuo ut alienum non laedas* is firmly established in international law, and a State found to have breached this duty will be liable for the consequences.[18]

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16. *Corfu Channel Case, I.C.J. Reports* (1949), at pp. 22-23.

17. 53 *American Journal of International Law* 156-171 (1959).

18. *Cf.* Lauterpacht's Oppenheim, *International Law*, London, (8th ed., 1955), pp. 346-347, wherein it is stated that the duty to use property so as not to injure that of another is "a general principle of law recognised by civilised nations."

iv) the *North Sea Continental Shelf Cases*

In 1945 the United States in the "Truman Proclamation" unilaterally declared that she exercised exclusive jurisdiction to explore and exploit the natural resources of her continental shelf.[19] This assertion not only went unchallenged, but gradually was imitated by other States. In the 1951 *Abu Dhabi Arbitration*, the arbitrator concluded that a doctrine which imbued the coastal State with exclusive rights over the natural resources of its continental shelf could in no form have assumed the "hard lineaments" required of international customary law.[20] The Continental Shelf Convention was concluded at the first United Nations Conference on the Law of the Sea at Geneva in 1958 and came into force in 1964.[21] This treaty, dealing with the nature and extent of coastal State rights in respect of the adjacent continental shelf did not purport to codify customary law as did the High Seas Convention. Thus, in 1969 at the time of the *North Sea Cases*, it was unclear whether the continental shelf doctrine conferring certain rights over the adjacent seabed on coastal States had yet become incorporated into international customary law. The I.C.J. decided that it had.

The Court, in deciding an issue of seabed delimitation involving Denmark and the Netherlands (which were Parties to the Continental Shelf Convention) and the Federal Republic of Germany (which was not a Party), found that

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19. Presidential Proclamation No. 2667, September 28, 1945, 10 *Federal Register* 12303 (1945); 4 *Whiteman* 756.

20. *Petroleum Development Ltd.* v. *Sheikh of Abu Dhabi*, 47 *American Journal of International Law* 156-159 (1953), at p. 158.

21. Signed 19 April 1958, in force 10 June 1964; Cmnd. 2422 (1964).

> "the rights of the coastal State in respect of the area of continental shelf that constitutes a natural prolongation of its land territory into and under the sea exist *ipso facto* and *ab initio*, by virtue of its sovereignty over the land, and as an extension of it in an exercise of sovereign rights for the purpose of exploring the seabed and exploiting its natural resources. In short, there is here an inherent right."[22]

Following this decision, it is clear that a coastal State need not be a Party to the Continental Shelf Convention to claim sovereign rights over this subsea area. It is, however, unclear how much earlier (if at all) than the I.C.J. opinion non-Parties could claim rights over the continental shelf. That question is relevant to the development of the U.K. and Norwegian sectors because the latter State was not a Party to the Continental Shelf Convention at the time of delimitation in 1965.[23] Moreover, the case illustrates the development of customary law, a process which is relevant indeed to the control of marine pollution in the North Sea.

2. "Emerging" international customary law?

Technology is shrinking our world and confirming our interdependence. State A's offshore drilling may affect State B; State C's nuclear tests may cause injury to all. These new problems require new solutions, two of which, law and organisations, are of particular relevance to the control of marine pollution.

Advances in technology may require the rapid development of law to regulate actions hitherto unimagined, for example, offshore

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52 *American Journal of International Law* 858-862 (1958).

22. *Op. cit.* in footnote 2, at para. 19.

23. See below, p. 420.

petroleum development, nuclear powered supertankers. The same organisational skills which enabled technological advances are increasingly to be found employed in the regulation of their creations. The proliferation of organisations--inter-governmental, non-governmental, and private--involved directly or indirectly in the regulation of activities which could result in marine pollution profoundly affects the development of both international and municipal law.

Organisations are important to pollution control in two distinct but related ways: 1) Behavioural norms formalised by the organisation may be faithfully practised and become regarded as obligatory, thus satisfying the two criteria for classification as international customary law. 2) Such norms may also be accorded respect as if they were law, even though they are observed for political or other reasons. In both cases norms contribute to the legal regime of pollution control; in the first instance this is because they have actually become part of the legal framework. In the latter instance, such norms complement but remain external to the legal regime. The present regime of pollution control in the North Sea is, in the writer's view, composed of a complex network of observed behavioural norms. Some of the dozens of organisations which may influence the law of marine pollution control in the North Sea are briefly described below, and mention is also made of unilateral acts of States.

a) U.N. organs and organisations

i) the U.N. General Assembly

Certain Resolutions of the General Assembly are of particular importance to the development of international law. Regardless of the

position one takes on the question of whether such Resolutions *ultra vires* the express provisions of the Charter are binding, there is little question that in certain cases they do influence State behaviour.[24] Moreover, the General Assembly has adopted several Resolutions which authorise pollution control work.[25] The First United Nations Conference on the Law of the Sea, convened at Geneva in 1958 pursuant to General Assembly Resolution[26] resulted in the adoption of four Conventions.[27] Work of the U.N. Sea-bed Committee,

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24. For example, General Assembly Resolution 2574D (XXIV), the "moratorium resolution," declared that States and persons were bound to refrain from all activities of seabed exploitation in the area beyond national jurisdiction. Although the Resolution was adopted by only a vote of 68-28-28 and the U.S. had voted against it, that State denied an application from Deapsea Ventures for mining rights and protection in the mid-Pacific, stating, "The appropriate means for the development of the law of the sea is the Third United Nations Conference on the Law of the Sea and not unilateral claims." Deepsea Ventures, Inc., "Notice of Discovery and Claim of Exclusive Mining Rights, and Request for Diplomatic Protection and Protection of Investment," 14 *International Legal Materials* 51-65; U.S. State Department Reply, 14 *International Legal Materials* 66, (1975). *Cf.* the UNCTAD Resolution on Permanent Sovereignty over Natural Resources, 88 (XII), which "*reaffirms* the sovereign right of all countries freely to dispose of their natural resources ...." and affirms the right of nationalization to effect this right. 11 *International Legal Materials* 1474-1475 (1972).

25. Resolution 2414, 17 December 1968: Promotion of pollution control treaties (adopted without objection); Resolution 2467B, 21 December 1968: Requested a study on pollution control (119-0-0); Resolution 2566, 13 December 1969: Requested a study of pollutants and their control (unanimous); Resolution 2749, 17 December 1970: Declaration of principles governing the seabed, etc. beyond national jurisdiction (108-0-14); Resolution 2750C, 17 December 1970: Decided to convene a conference on the law of the sea (108-7-6).

26. U.N. General Assembly Resolution 1105 (XI), 21 February 1957.

27. Besides the High Seas and Continental Shelf Conventions already mentioned, the Convention on the Territorial Sea and the Contiguous Zone and the Convention on Fishing and Conservation of the Living Resources of the High Seas were adopted and came into

constituted by the General Assembly, led eventually to a Resolution calling for a Third United Nations Conference on the Law of the Sea (hereafter, UNCLOS III). It would be misleading to credit the General Assembly with the law which may be incorporated in the UNCLOS III Convention--but that organisation would certainly be indirectly responsible. Indeed, as the negotiations at UNCLOS III may already be affecting the present law of the sea (for example, indicating apparent trends to 12-mile territorial seas and 200 mile Fishing or Exclusive Economic Zones) it is safe to assert that the General Assembly has already influenced the development of the law of the sea.

ii) The International Law Commission (ILC)

The ILC was established by the U.N. General Assembly to assist the parent body in its duties of

> "promoting international co-operation in the political field and encouraging the progressive development of international law and its codification."[28]

The ILC was very much involved in determining the current law of the sea, having submitted the 73 Draft Articles upon which the 1958 Conventions are based,[29] but in recent years its influence has waned and it was not invited to to submit a similar set of Draft Articles to UNCLOS III.[30] The ILC has continued its work, however, and its

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force on 10 September 1964 and 20 March 1966. The U.K. is a Party to both instruments; Norway to neither.

28. Charter of the United Nations, Article 13 (1)(a); Bowett, D., *The Law of International Institutions*, Stevens and Sons, London (2d ed., 1970), p. 50.

29. See *Report on the First United Nations Conference on the Law of the Sea* Cmnd. 584 (1958).

30. The ILC is distrusted by some developing States who view it as an organisation which seeks to perpetuate a system of law which

recent Draft Articles on State Responsibility, declaring that every internationally wrongful act of a State entails the international responsibility of that State, may well prove to be an important contribution to the development of that aspect of international law.[31]

iii) UNCLOS III

The objective of this Conference is to conclude a "package deal" covering the known spectrum of law of the sea issues as listed in the Conference agenda. This awesome task was divided among three Committees:

1. Committee I: the legal regime for the sea-bed and ocean floor beyond national jurisdiction.

2. Committee II: all law of the sea issues not assigned to the other Committees, plus a wide variety of specified items, including, *inter alia*, the continental shelf, proposals for an Exclusive Economic Zone (EEZ) and innocent passage.

3. Committee III: marine pollution, scientific research and transfer of technology.

At the time of this writing, UNCLOS III had met five times and was planning a sixth session.[32] Following the third session, the Chairman of each Committee produced an Informal Single Negotiating Text (ISNT), which was intended to serve as a "procedural device" to facilitate

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they had no part in making and which is inimical to their best interests. Professor D.H.N. Johnson, lecture in International Law of the Sea, London School of Economics, 5 December 1973. Because UNCLOS III did not start from a set of Draft Articles, each substantive issue is the subject of tactical and strategic alliances among States who seek to optimise their self interest.

31. See the Report of the ILC on its 25th Session, May-July 1973, A/9010/Rev. 1 (XXVIII). Five remaining Draft Articles expand and clarify the basic provision on State responsibility.

32. UNCLOS III sessions and dates of meeting follow: New York (December 1973); Caracas (June 1974); Geneva (March 1975); New York (March 1976, August 1976). The sixth meeting is planned for New York in May, 1977.

agreement, and

> "not in any way [to] be regarded as affecting either the status of proposals already made by delegations or the right of delegations to submit amendments or new proposals."

A Revised Single Negotiating Text (RSNT) has incorporated changes resulting from the fifth session.

Despite the express limitation of the RSNT to the status of a procedural device, it is clear that these documents are of considerable evidentiary value to predictions of the nature and scope of the emerging legal regime. Several provisions of the Committee II and Committee III RSNTs are relevant to the existing legal regime of pollution control in the North Sea and will be discussed as appropriate.

iv) the U.N. Conference on the Human Environment (UNCHE)

The UNCHE was convened in Stockholm in 1972 pursuant to General Assembly Resolution.[33] Two results of the Conference were directed to increased control of environmental pollution: 1) the adoption of the Stockholm Declaration on the Human Environment,[34] and 2) the establishment of the United Nations Environment Programme.

The Declaration contains 25 Principles, setting forth an "environmental ethic," and an "Action Plan" of over 100 Recommendations designed to implement it.[35] These constituents of the Declaration have been

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33. General Assembly Resolution 2398 (XXIII), 3 December 1968.

34. The Declaration is contained in 11 *International Legal Materials* 1416-1469 (1972).

35. An Inter-governmental Working Group on Marine Pollution (I.W.G.M.P.) also adopted a number of "guiding principles" (distinct from the "general principles" in Chapter I of the Declaration), including nine of particular interest here:

> "(1) Every State has a duty to protect and preserve the marine environment and, in particular, to prevent pollution that may

widely recognised as declaring to some extent existing norms of

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affect areas where an internationally shared resource is located.

(2) Every State should adopt appropriate measures for the prevention of marine pollution, whether acting individually or in conjunction with other States under agreed international arrangements.

(3) States should use the best practicable means available to them to minimise the discharge of potentially hazardous substances to the sea by all routes, including land-based sources such as rivers, outfalls and pipelines within national jurisdiction, as well as dumping by or from ships, aircraft and platforms.

(4) States should ensure that their national legislation provides adequate sanctions against those who infringe existing regulations on marine pollution.

(5) States should assume joint responsibility for the preservation of the marine environment beyond the limits of national jurisdiction.

(17) In addition to its responsibility for environmental protection within the limits of its territorial sea, a coastal State also has responsibility to protect adjacent areas of the environment from damage that may result from activities within its territory.

(18) Coastal States should ensure that adequate and appropriate resources are available to deal with pollution incidents resulting from the exploration and exploitation of seabed resources in areas within the limits of their national jurisdiction.

(20) All States should ensure that vessels under their registration comply with internationally agreed rules and standards relating to ship design and construction, operating procedures and other relevant factors. States should cooperate in the development of such rules, standards and procedures, in the appropriate international bodies.

(21) Following an accident on the high seas which may be expected to result in major deleterious consequences from pollution or threat of pollution of the sea, a coastal State facing grave and imminent danger to its coastline and related interests may take appropriate measures as may be necessary to prevent, mitigate, or eliminate such danger, in accordance with internationally agreed rules and standards."

Guiding principle 3 reflects the extensive work that the I.W.G.M.P. had done in efforts to conclude a convention on the control of ocean dumping which finally resulted in the London Dumping Convention at the end of 1972. Principle 21 states the basic principle of the 1969 Intervention Convention.

of international law,[36] and the instrument itself as "a first step toward the development of international environmental law."[37]

Principles and Recommendations particularly pertinent to pollution from petroleum development activities in the North Sea include:

Principle:

6 states that excessive discharge of toxic substances into the environment must be halted

7 requires States to take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea

21 provides that States have the responsibility to ensure that resource exploitation within their jurisdiction does not damage the environment of other States or areas beyond the limits of national jurisdiction

22 obligates States to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction

25 asserts that States shall ensure that international organisations play a co-ordinated, efficient and dynamic role for the protection and improvement of the environment.

Four Recommendations are noteworthy.

Recommendation 48 asks for international cooperation to safeguard the marine environment from adverse effects caused by natural resource exploitation or discharge of wastes which may affect the seas.

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36. See, for example, Birnie, P., "The Basic Obligation to Protect the Marine Environment", in Stein, R. (ed.), *Critical Environmental Issues on the Law of the Sea*, International Institute for Environment and Development, London (1975), pp. 1-8, at p. 4.

37. Mr. J.A. Beesley of the Canadian Ministry of External Affairs is a particularly outspoken advocate of this view.

Number 86 recommends:

"that Governments, with the assistance and guidance of appropriate United Nations bodies, in particular the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP):

(a) Accept and implement available instruments on the control of the maritime sources of marine pollution;

(b) Ensure that the provisions of such instruments are complied with by ships flying their flags and by ships operating in areas under their jurisdiction and that adequate provisions are made for reviewing the effectiveness of, and revising, existing and proposed international measures for control of marine pollution;

(c) Ensure that ocean dumping by their nationals anywhere, or by any person in areas under their jurisdiction, is controlled and that Governments shall continue to work towards the completion of, and bringing into force as soon as possible of, an over-all instrument for the control of ocean dumping as well as needed regional agreements within the framework of this instrument, in particular for enclosed and semi-enclosed seas, which are more at risk from pollution."

This Recommendation is part of the development of international law regulating ocean dumping which had resulted in the Oslo Convention earlier in 1972 and the London Dumping Convention in the waning days of that year.[38]

Recommendation 88, which is intended to ensure that GESAMP reviews its "Review of Harmful Chemical Substances" annually, is also relevant to the 1973 IMCO Convention and the London Dumping Convention to which are annexed lists of harmful substances classified by GESAMP.[39]

Recommendation 92 asks that Governments collectively accept the

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38. The control of dumping is discussed below at pp. 204 *et seq.*

39. The 1973 IMCO Convention is discussed below at pp. 160 *et seq.*

"guiding principles" formulated by the I.W.G.M.P. for UNCLOS III and the 1973 Inter-governmental Maritime Consultative Organisation (IMCO) Conference which concluded the 1973 IMCO Convention.[40]

v) the U.N. Environment Programme (UNEP)

The UNCHE approved the establishment of an organisation consisting of a Secretariat, headed by an Executive Director, a Fund, and a Governing Council.[41] The UNEP was recognised by the U.N. General Assembly in 1973 when the new organisation was asked to survey the living resources of the sea in cooperation with the Food and Agriculture Organisation (FAO) and to "continue to direct special attention to the question of environmental protection of the seas, and in particular its living marine resources."[42] In the years since its inception, UNEP has become involved in a number of projects relevant to marine pollution control, including the initiation of regional programmes[43] and contributing to existing programmes[44] both with

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40. The "guiding principles" relevant to marine pollution control are listed in footnote 35.

41. Declaration, Chapter Three.

42. U.N. General Assembly Resolution 3133 (XXVII), 13 December 1973.

43. The most notable regional programme is a joint effort of UNEP, IMCO and FAO to control pollution in the Mediterranean. (See Final Act of the Conference on the Protection of the Mediterranean Sea, 15 *International Legal Materials* 285-318 (1976).) Work on a proposed treaty to control pollution in the Mediterranean from land-based sources is continuing, and it has been reported that following agreement on a set of principles, a Convention may be opened for signature at the end of 1977. *International Herald Tribune*, 12-13 February 1977, p. 2.

44. The UNEP assisted developing countries to attend the IMCO Symposium on Prevention of Marine Pollution from Ships, held in Acapulco 22-31 March 1976, for the purpose of assisting ratification of the 1973 IMCO Convention. For a synopsis of UNEP's continuing assistance to existing programmes, see *Marine Pollution Bulletin* (1974), p. 90.

particular reference to developing States. UNEP effectiveness has, however, been somewhat inhibited by the inadequate resources of its voluntary Fund[45] (and, perhaps, by its geographical isolation in Nairobi).

b) U.N. agencies

i) The Inter-governmental Maritime Consultative Organisation

IMCO is a specialised agency of the U.N. composed of approximately 90 States, established in 1959 to deal with maritime matters. Understandably, the Organisation tends to view law of the sea issues from a shipowner's perspective. IMCO's activities include the setting of standards relevant to both vessel safety and pollution control as well as the adoption of laws and guidelines to ensure their observance. The Organisation is a depository for most of the Conventions discussed in this thesis, including some (such as the 1954 International Convention for the Prevention of Pollution of the Sea by Oil, and the London Dumping Convention) which were concluded under other auspices. A brief description of some of IMCO's current work may indicate trends in the law of vessel-source marine pollution control.

The new Marine Environment Protection Committee (MEPC) works closely with the Maritime Safety Committee (MSC) and several sub-committees on general and technical aspects of marine pollution control. The MEPC has been particularly concerned with the implementation of the 1973 IMCO Convention and the technical problems which must be overcome before this will be possible.[46] Thus, at its Fifth and Sixth

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45. Payments from member States have lagged far behind their pledges. *The Times*, 31 March 1976, p. 6.

46. See below, p. 160.

Sessions, the MEPC discussed oily-water separation equipment, oil and other reception facilities, and problems associated with the Annex dealing with the transportation of liquid chemicals in bulk. A related but distinct issue was the possibility of complementing the 1973 Convention by retrofitting existing tankers with segregated ballast tanks.[47]

The Legal Committee is currently considering, *inter alia*, civil liability for pollution damage from substances other than oil, a possible convention on Wreck Removal and Related Issues, and proposals for a treaty elaborating a Regime of Vessels in Foreign Ports.[48]

The MSC is primarily concerned with vessel standards and procedures, including vessel routeing, and this wide area of responsibility also includes crew training. Since most vessel accidents are caused by human error rather than mechanical failure, efforts of the MSC (in co-operation with the International Labour Organisation and several non-governmental organisations) to draft an International Convention on Training of Seafarers are particularly important.[49]

ii) GESAMP

The Group of Experts on the Scientific Aspects of Marine Pollution (hereafter, GESAMP) is composed of 12 experts from Russia, North America, Japan, Scandinavia, Poland, Netherlands, France and the United Kingdom. The Group also includes representatives of the sponsoring

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47. The 1973 IMCO Convention requires only that all *new* ships over 70,000 tons be constructed with segregated ballast tanks. As the current glut of tanker capacity suggests that it is likely to be some time before new tankers are needed, the MEPC has been considering retrofitting as a means of bringing old ships up to new ship standards.

48. IMCO, *Annual Report* (1975-76), paras. 67-70, p. 18.

49. *Ibid.*, at para. 21, p. 6.

agencies and observers from interested international organisations (for example, ICES--described below) which brings the total membership to approximately thirty.

GESAMP is sponsored by the FAO, UNESCO, IMCO, the World Health Organisation, the World Meteorological Organisation (WMO), and the International Atomic Energy Agency (IAEA). GESAMP has been very active in providing the scientific assistance necessary for standard setting; for example, the Group's findings determine the classification of substances in the 1973 IMCO Convention and the London Dumping Convention[50] (which will be described later).

iii) The Inter-governmental Oceanographic Commission (IOC)

The IOC was established in 1960 within UNESCO for the purpose of promoting scientific investigation of the world's oceans. IOC is composed of States, although it works closely with FAO, WMO and IMCO, as well as with UNESCO, which acts as the Secretariat. A number of programmes conducted under the auspices of the IOC are summarised below.

The Long-term and Expanded Programme of Oceanic Exploration and Research (LEPOR) is a programme intended to increase knowledge of the oceans. The Global Investigation of Pollution in the Marine Environment (GIPME) is a co-operative programme which is itself a major part of LEPOR. GIPME is concerned with the effects of substances input into

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50. GESAMP has a number of Working Groups concerned with specific aspects of marine pollution, which include the biological effects of oil on living organisms, the effects of non-oil agents on the marine environment, effects of offshore development of the seabed on the environment, and the siting of areas for ocean dumping. MEPC III/4/1, 2, 4 and MEPC III/34/1/Add.1. (Compiled by Dr. Viktor Sebek in an unpublished paper for the Advisory Committee on Oil Pollution of the Sea.)

the sea. The International Co-ordination Group (ICG), supported by FAO, IAEA, IMCO, UN, UNESCO and WMO is involved in the implementation of GIPME.

The Integrated Global Ocean Station System (IGOSS) is a joint IOC/WMO programme intended to provide information for global monitoring systems. The IGOSS pilot project is concerned with hydrocarbon data and includes a Norwegian study on tar balls in the North Sea.[51]

The International Decade of Ocean Exploration (IDOE) is a programme of international co-operation in oceanic exploration during the decade of the 1970s. IDOE was endorsed by the U.N. General Assembly in 1968,[52] and was established by the IOC in the following year as part of LEPOR.

c) non-U.N. inter-governmental organisations

i) The European Economic Community

As all the North Sea littoral States except Norway are members of the EEC, that organisation offers excellent opportunities for agreement on a regional regime of pollution control. Although the Community has become involved to a significant extent in environmental questions rather late in its life, it is now quite active.

A Declaration of the Council of the European Communities and of the Representatives of the Governments of the Member States Meeting in the Council of 22 November 1973 on the Programme of Action of the European Communities on the Environment (hereafter, the 1973 Declaration), although containing a section on marine pollution in a chapter

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51. A paper in Norwegian by Gary B. Smith, "*Oljeklumper I Farvannene Utenfor Norge*," published by the Norwegian Fisheries Directorate (1975 Nr. 6) reports on this problem.

52. U.N. General Assembly Resolution 2414 (XXVIII).

entitled "Action Specific to Certain Areas of Common Interest," was really only a general statement of marine pollution problems. However, the 1973 Declaration provided a foundation upon which to build more concrete structures to control marine pollution, including work in the areas of standard setting, information sharing and marine pollution control.[53] A number of actions have been taken; the most important is the Convention for the Prevention of Marine Pollution from Land-Based Sources, for which the Community was responsible (discussed below).[54] Agreement in principle has been reached on a Council Directive on the reduction of pollution caused by certain dangerous substances discharged into the aquatic environment of the Community.[55] Actions planned include, *inter alia*, rules for operational discharges of dangerous substances from ships in the territorial sea and the establishment of standards and procedures for the discharge of

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53. Bulletin of the European Communities, Supplement 6/76, para. 2, p. 16.

54. Council Decision of 3 March 1975 concluding the convention for the prevention of marine pollution from land-based sources (75/437/EEC). Other relevant documents include: Council Decision of 3 March 1975 concerning Community participation in the Interim Commission established on the basis of resolution no. III of the convention for the prevention of marine pollution from land-based sources (75/438/EEC), Council Recommendation of 3 March 1975 regarding cost allocation and action by public authorities on environmental matters (75/436/Euratom, ECSC, EEC), Council Directive of 16 June 1975 on the disposal of waste oils (75/439/EEC), Council Directive of 16 June 1975 concerning the quality required of surface water intended for the abstraction of drinking water in the Member States (75/440/EEC), Council Decision of 24 June 1975 establishing a common procedure for the exchange of information between the surveillance and monitoring networks based on data relating to atmospheric pollution caused by certain compounds and suspended particulates (75/441/EEC).

55. The problem which was resolved concerned the difference in views between eight Members (plus the Commission) which thought that discharges of the most toxic pollutants should be limited by setting emission standards, and the U.K. which wanted quality objectives only. Bulletin of the European Communities, 12/1975, point 1502. The U.K. position is that its fast rivers and strongly-flushed

such substances into the aquatic environment of the Community.[56] It is of particular interest to note the Community's role in developing a regional Convention on the Protection of the Mediterranean Sea[57] and its interest in acceding to the Baltic Convention.[58] It is possible that inter-regional agreement on standards and procedures may be a first hesitant step toward a more nearly global convention for the protection of our environment--a convention built from larger bargaining units than individual States.[59] Finally, the recent treaty intended to reduce the discharges of harmful substances into the Rhine should also be mentioned as an instrument of potentially great value in reducing the volume of pollutants entering the North Sea.

ii) The International Council for the Exploration of the Sea (ICES)

ICES, to which both the U.K. and Norway belong, is an inter-governmental body co-ordinating the investigations of 18 North Atlantic States (including the U.S. and Canada) into that ocean. ICES acts as an advisory body to a number of organisations, including the North-east Atlantic Fisheries Commission (NEAFC), the Baltic Commission and the Oslo Commission. Although ICES does have working groups concerned with

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seas are national assets which enhance its economic position, that quality standards would protect the environment, and that uniformity for its own sake would be unjustified.

56. Bulletin of the European Communities, Supplement 6/76, para. 3, p. 17.

57. *Ibid.*, at para. 4, p. 17.

58. *Ibid.*, at para. 4.1, p. 17.

59. It is arguable that the blocs bargaining at UNCLOS III are another example of larger bargaining units, although it must be remembered that the States within blocs are drawn together by many factors which may actually override geographical proximity, for example, the mutual interests of landlocked States.

such problems as oil and mud, it does little research iself, acting more as a Secretariat to member States by compiling and publishing reports and statistics and organising working parties and conferences. *Cooperative Research Report No. 58* is a recent publication extending earlier monitoring work conducted in the North Sea to the Atlantic.[60]

iii) The Organisation for Economic Cooperation and Development

The OECD is a group of Western industrialised States concerned with problems related to economic growth, including pollution control.[61] The OECD has made a number of recommendations to members, the most important of which are the Recommendation on Guiding Principles Concerning Environmental Policies,[62] which established the general OECD approach to pollution control, and the Recommendation on the Implementation of the Polluter Pays Principle, which is concerned with allocation of environmental protection costs.[63]

iv) The NATO Committee on the Challenges of Modern Society

The CCMS was formed in 1969 with the objective of investigating how a better environment might be created for the societies of NATO

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60. The Report was published in January, 1977. A report on extended baseline studies will also be published in the future. Letter from Mr. Hans Tambs-Lyche, General Secretary, to the writer 9 March 1977.

61. Although the OECD can hardly be termed a "regional organisation" as such States as the U.K., Norway, the U.S. and Japan are grouped by interest rather than geography, because Norway is a member, the OECD offers an advantage over the EEC in respect of developing the control of North Sea pollution.

62. May 26, 1972.

63. November 14, 1974. Other relevant Recommendations include a Declaration on Environmental Policy, and Principles Concerning Transfrontier Pollution, both of November 14, 1974.

members.[64] CCMS does not engage in research itself nor engage in executive action; instead, the Committee "normally proceeds by inviting members to propose subjects and to indicate studies they would be willing to pilot .... ."[65] A Pilot Study on Coastal Water Pollution was started in 1970[66] and at the end of a year a Conference on oil spills was convened. One result of that Conference was a decision to proceed within IMCO toward a treaty to control vessel-source oil discharges--an effort which contributed to the conclusion of the 1973 IMCO Convention.[67] The Pilot Study itself is concerned with two aspects of Coastal Water Pollution: 1) the establishment of a dynamic mathematical model of North Sea Pollution, and 2) prevention of oil pollution from oil spills.

d) non-governmental organisations

NGOs are a growing force in the determination of international law. Some NGOs seek to influence the development of international law directly: such organisations as the National Wildlife Federation in the U.S., the Royal Society for the Protection of Birds in the U.K.

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64. Train, R., "A New Approach to International Environmental Co-operation: The NATO Committee on the Challenges of Modern Society," 22 *Kansas Law Review* 167-191 (1974), at p. 172, citing "Note by the Assistant Secretary General for Scientific Affairs on the Organization of the Committee on the Challenges of Modern Society," NATO Unclassified Doc. AC/274-D/1 (Nov. 17, 1969) at 3.

65. *Ibid.*, at p. 5 of the NATO Document. There is, however, a NATO Sub-Committee on Oceanographic Research which has investigated a number of important problems. See Allan, T. "Collaboration within the Alliance Advances Marine Research," *NATO Review*, February 1977, at pp. 12-19.

66. The CCMS Pilot Study on Coastal Water Pollution has not yet been published. Letter from Mr. L. Klette, Secretary to CCMS, to the writer, 28 October 1976.

67. Papers read at the Conference are collected in NATO CCMS, *Coastal Water Pollution of the Sea by Oil Spills*, No. 1, Brussels (1970).

and the Norwegian Conservation Society are active at both national and international levels, although it is thought that they are most effective when seeking to influence individual States to advocate certain positions in international fora.[68] Industrial groups, such as the American Petroleum Institute, the General Council of British Shipping, and the Oil Companies International Marine Forum (OCIMF), although not usually thought of as NGOs, are non-governmental organisations which employ similar means to influence the development of law favourable to their own interests. Some NGOs, however, while very much interested in international legal developments, tend to concentrate their attention on subjects which are themselves relevant to the development of international law. This is particularly true of NGOs concerned with scientific inquiry, such as the International Council of Scientific Unions (ICSU) and its functional arms, the Scientific Committee on the Problems of the Environment (SCOPE, concerned with environmental monitoring), and the Scientific Committee on Oceanic Research (SCOR, concerned with the promotion of international scientific inquiry into the marine environment).

e) convention commissions

Commissions, meeting periodically, are afforded an opportunity to assess the operation of the convention and, if necessary, take corrective action. The Oslo Convention is representative of treaties which have such Commissions. Thus, it is the duty of the Oslo Com-

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68. Rambach, P. and Stein, R., "Non-Governmental Organizations: A Force for Change in the Law of the Sea," in Stein, R. (ed.), *Critical Environmental Issues on the Law of the Sea*, International Institute for Environment and Development, London (1975), pp. 53-57, at p. 54.

mission to supervise implementation of the Convention, to act as a Secretariat, to review the condition of the seas in the Convention area, to evaluate control measures and to consider whether different measures are needed.[69] The Oslo Commission is therefore vested with substantial authority to shape the Convention without actually amending it. A Draft Resolution recommending that the Convention be interpreted to apply to certain petroleum exploitation activities (which will be described in detail later) is an example of how a commission may influence the development of law.

f) unilateral acts of States

There are numerous examples of unilateral acts of States which promote the development of customary law. The *Anglo-Norwegian Fisheries Case* provided impetus to the development of the doctrine of straight baselines. The case arose following U.K. protests concerning the Norwegian practice of constructing baselines linking the outer edge of the *skjaergaard* and headland points as the basis from which to measure her territorial sea. The U.K. did not protest this practice for some time; when she did, the U.K. position was that international law required that baselines be measured from the low water mark. The I.C.J. decision, based in part on a finding of U.K. acquiescence, was that the Norwegian action was not contrary to international law.[70] Thus, although "delimitation of sea areas always has an international aspect"[71] which requires consideration of the rights of other States,

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69. Oslo Convention, Article 17.

70. *I.C.J. Reports*, (1951), p. 116.

71. *Ibid.*, p. 132.

the doctrine was found to have been implicitly accepted by the U.K. Seven years later it was incorporated into the Geneva Convention on the Territorial Sea.[72]

A more recent example is the Canadian Arctic Waters Pollution Prevention Act of 1970. Canada, as a nation characterized by a long coastline and a small merchant fleet has consistently advocated a regime of marine pollution control which favours coastal State protection rather than freedom of the seas. The Act became law in 1970,[73] following Canadian concern over the possible passage of U.S. supertankers through the Northwest Passage from Alaska to the East Coast,[74] the Arctic oil spill by the tanker *Arrow*,[75] and Canadian dissatisfaction with the 1969 Intervention and Civil Liability Conventions.[76]

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72. Territorial Sea Convention, Section II. One writer has observed that the I.C.J. decision loosened a conservative law, and so made agreement at Geneva possible. Rosenne, S., *The Law and Practice of the International Court*, Vol. I, Sijthoff, Leyden (1965), p. 18.

73. 18-19 Eliz. 2, c. 47 (Can.). The text of the Bill which became the Act is printed in 9 *International Legal Materials* 543-554 (1970).

74. Keating, B., "North for Oil: *Manhattan* Makes the Historic Northwest Passage," 137 *National Geographic* 374-391 (1970); Reinhard, W., "International Law: Implications of the Opening of the Northwest Passage," 74 *Dickinson Law Review* 678-690 (1970).

75. Clark, R., " The Biological Consequences of Oil Pollution of the Sea," in *Water Pollution as a World Problem*, Europa Publications Ltd., London (1970), pp. 53-73, at p. 67.

76. Canada objected to the 1969 Brussels Conventions because:

    1. Concern was with remedy rather than prevention.

    2. The Civil Liability Convention did not place liability on the cargo owner as well as the shipowner.

    3. Money damages only included destruction within territorial limits and excluded pollution damage to fishing vessels

In brief, the Act prohibits the deposit of waste in Arctic waters within 100 miles of the Canadian coast and imposes strict liability on the owner and/or operator of any vessel which causes damage. The Canadian authorities are also empowered to control navigation and establish vessel construction standards. Vessels within Arctic waters may be boarded to determine compliance with the Act, and may be excluded from the area if they are found to be sub-standard.

The U.S. promptly protested the Canadian action.[77] In reply, Canada observed that the Act was analogous to the Truman Proclamation: it was merely a unilateral act necessary for the development of international law.[78] Whether or not this is a valid analogy,[79] it is a

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and interests outside the territorial sea.

4. Oil pollution presented special dangers to the Canadian Arctic which would not be adequately protected under the Draft Conventions.

Hardy, M., *op. cit.* in footnote 1, at p. 328.

77. Department of State Press Release, No. 121, 15 April 1970; 9 *International Legal Materials* 605-606 (1970). The U.S. statement said in part, "International law provides no basis for these proposed unilateral extensions of jurisdictions on the high seas, and the United States can neither accept nor acquiesce in the assertion of such jurisdiction."

78. Canadian Reply to the United States Government, 16 April 1970; 9 *International Legal Materials* 607-615, (1970). The Canadian reply cited several U.S. assertions of jurisdiction on the high seas, such as nuclear tests areas, and stated that Canada had the same rights to protect its vital interests: "The proposed anti-pollution legislation is based on the overriding right of self-defense of coastal states to protect themselves against grave threats to their environment." For a critical view of the use of "self defence" as a justification for coastal State interference with the freedom of navigation on the high seas, see Brown, E.D., *op. cit.* in footnote 3, at pp. 142-143.

79. Several writers have observed that the assertion of sovereign rights over the continental shelf infringed no existing interests, unlike interference with navigation on the high seas.

tenable hypothesis that the Canadian action made the unilateral assertion of coastal State functional jurisdiction over extensive areas more acceptable to the developed countries.[80] Indeed, there has been a spate of such claims, the more remarkable of which include that of the U.S.A. (a 200 mile exclusive fishing zone, notable because that State has historically protested such actions by other States),[81] Mexico (a 200 mile exclusive *economic* zone in which the coastal State will have, *inter alia*, sovereign rights over all natural resources),[82] Norway (a 200 mile fisheries zone, discussed below),[83] and the U.K. (a 200 mile exclusive fisheries zone).[84] The U.K. claim is interesting because it reflects the EEC common fisheries policy: in effect, this is an instance of an international organisation making a unilateral claim. Finally, it should be noted that Canada has built upon the Arctic Waters Pollution Prevention Act, extending her fisheries limits to 200 miles.[85]

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80. Prior to the Canadian action the assertion of extensive coastal State jurisdiction was associated with South American States. It is suggested that the unilateral act of a developed North American State imbued the concept of extended coastal State jurisdiction with a new respectability in the view of other developed States.

81. The Fishery Conservation and Management Act of 1976, Public Law 94-265; 15 *International Legal Materials* 634-650 (1976).

82. Decree on Constitutional Change to Account for Exclusive Economic Zone Beyond Limits of Territorial Sea; 15 *International Legal Materials* 380-387 (1976).

83. See below, p. 484.

84. Fisheries Limits Act, 1976.

85. Fishing Zones of Canada (Zones 4 and 5) Order; 15 *International Legal Materials* 1372-1375 (1976).

3. Conventions

The remainder of this chapter examines existing and proposed conventions on the legal regime of pollution control in the North Sea. These conventions will be reviewed briefly as they have been extensively analysed elsewhere, concentrating instead on recent developments:

1. The work of the Conference on Safety and Pollution Safeguards in the Development of North-West European Offshore Mineral Resources.

2. The International Convention for the Prevention of Pollution from Ships, 1973.

3. Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources.

In addition, the work of UNCLOS III will be described as appropriate.

B. Pollution from Seabed Operations

Whether influenced by politics, convenience, or necessity, conventions intended to control marine pollution have been primarily concerned with the discharge of oil from vessels. In consequence, there is no single comprehensive instrument concerned with the control of seabed operations in the U.K. and Norwegian sectors of the North Sea. The present legal regime is a patchwork of treaties and national legislation. The need for a comprehensive convention to control this potential source of marine pollution has, however, been recognised, and the work of the Offshore Pollution Conference and UNCLOS III provide an indication of the form such a convention is likely to assume.

1. The Geneva Convention on the Continental Shelf

As mentioned above, both the U.K. and Norway are Parties to the Continental Shelf Convention, although the latter only acceded to the treaty in 1971, years after claiming sovereign rights over the adjacent

seabed.[86]

Article 1 defines the term "continental shelf" using distance and depth exploitability criteria.[87] The ambiguity of this provision is not a problem in the North Sea because that entire area has been accepted by the littoral States as one characterised by a continental shelf.

The coastal State is granted "sovereign rights" only for the purpose of exploring and exploiting continental shelf natural resources. As sovereignty is limited, coastal State authority to enact law is likewise limited: jurisdiction cannot exceed sovereignty. It is expressly provided that sovereign rights do not extend to the superjacent water and air space.[88]

Coastal State sovereign rights likewise do not entitle that State to exclude pipelines and cables from its continental shelf unless exclusion is reasonably necessary for continental shelf resource development.[89]

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86. Norway did not accede to the Continental Shelf Convention until she secured a delimitation agreement with the U.K. and Denmark which recognised her sovereign rights over the continental shelf beyond the Norwegian Trough. See below, p. 420.

87. Continental shelf means "the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the natural resources of the said areas .... ."

88. Article 3.

89. Article 4. As the freedom to lay submarine pipelines and cables beneath the high seas is an international customary law right, all States must permit the reasonable exercise of this right on their continental shelves. *Cf.* High Seas Convention Articles 2, 26. In the North Sea, pipelines laid between the U.K. and the Norwegian sector are regulated by bilateral agreement. The only instance of a pipeline crossing the continental shelf of a third

Article 5 is directly concerned with regulating the rights granted to the coastal State in respect of its continental shelf. In developing the natural resources of its continental shelf, the coastal State must not "unjustifiably" interfere with navigation, fishing or the conservation of the living resources of the sea.[90] Although "unjustifiable" is not defined, the plain meaning of the term suggests that it is indistinguishable from the "reasonable use" test of the High Seas Convention and international customary law.

The coastal State may place on the continental shelf "installations or devices" to develop its natural resources, and may establish "safety zones" around them.[91] The safety zones may extend up to a 500 metre radius from the outer edge of such installations or devices, and within that area the coastal State may take measures to protect them.[92] All ships must respect such safety zones,[93] but no express

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State is in the case of the gas pipeline from the Norwegian sector to Germany, which crosses the Danish shelf. Although pursuant to the terms of a bilateral treaty with Germany, Denmark has claimed authority to apply her laws to foreign pipelines on her continental shelf, there have been no problems in regard to the Ekofisk-Emden pipeline. In fact, it is arguable that Denmark is under a High Seas Convention (and customary law) duty to "draw up regulations to prevent pollution of the seas by the discharge of oil from .... pipelines .... or resulting from the exploitation and exploration of the seabed and its subsoil taking account of existing treaty provisions on the subject," and in the reasonable application of its regulations to the pipeline, it is only fulfilling a legal obligation.

90. Article 5(1).

91. Article 5(2).

92. Article 5(2), (3). The "measures" which may be taken are not defined, but certainly must comply with the customary law requirement that they be "reasonable," considering their function of installation protection.

93. Article 5(3). This controversial provision purports to bind

authority is granted to the coastal State to exclude foreign navigation. Moreover, Article 5(6) prohibits interference with "the use of recognised sea lanes essential to international navigation."[94]

The coastal State must

> "undertake, in the safety zones, all appropriate measures for the protection of the living resources of the sea from harmful agents."[95]

Once again, it will be the coastal State which will in the first instance determine what measures are appropriate. The imposition of this ambiguous duty upon the coastal State is, however, evidence that jurisdiction within the safety zone is subject to limits: it is a functional jurisdiction.

The final Article of relevance to this thesis concerns the

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even States non-Parties to the Convention. On the one hand it is arguable that a State cannot be bound by a treaty without its consent (*cf.* Vienna Convention, Article 34). On the other hand, it may well be the case that it is a reasonable use of the sea that the coastal States have the right to exclude vessels from the safety zones and that all foreign flag vessels are under a correlative duty to remain outside. "Safety" is clearly a reasonable justification for limiting freedom of the seas, but it must be considered in the context of specific circumstances.

94. Although the possibility of clusters of installations which might severely restrict navigation was considered by the committee which drafted this Article, no provisions relating to possible conflict between seabed development and navigation were adopted by the Geneva Conference. Gutteridge, J., "The 1958 Geneva Convention on the Continental Shelf," 35 *British Yearbook of International Law* 102-123 (1959), at p. 122. One writer has ventured the view that "the rigs must be established in such a way that the right of sailing between points A and B remains possible, but the right to sail over point X is not guaranteed unless traversing point X is essential for navigation between A and B." Warbrick, C., "The Regulation of Navigation," in Churchill, R. (*et al.*) (eds.), *New Directions in the Law of the Sea*, Vol. III, British Institute of International and Comparative Law, London (1973), pp. 137-154, at p. 143.

95. Article 5(7).

delimitation of continental shelf boundaries among Parties to the Continental Shelf Convention.[96] If boundaries are not determined by agreement, they shall be the median line unless "special circumstances" justify another method of delimitation.[97] A network of bilateral agreements has now almost completely determined continental shelf delimitation within the North Sea.[98] Table III-1 on the following page tabulates continental shelf delimitation agreements which determine the U.K. and Norwegian sectors of the North Sea. (Figure III-1 on page 125 illustrates continental shelf boundaries for the entire North Sea.)

As indicated in Table III-1, the equidistance formula has been used in every instance of boundary delimitation, although not in every instrument. The U.K.-Norwegian boundary ignores the presence of the Norwegian Trough, an area that in places exceeds 200 metres, and therefore does not meet one of the criteria for determining the area

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96. Article 6.

97. Professor E.D. Brown considers four possible "special circumstances": geographical considerations, mineral deposits, navigation and fishing rights, and historical special circumstances in *The Legal Regime of Hydrospace*, *op. cit.* in footnote 3, at pp. 62-70. He concludes that "It is clear from the record that exceptional geographical circumstances constitute the main category of 'special circumstances'." Moreover, "The only situation which would seem to justify reference to natural resources as constituting special circumstances is that where a coastal State had acquired exclusive rights to such resources independently of, and prior to, the development of the Continental Shelf doctrine." The available evidence indicates that the nature and extent of North Sea hydrocarbon reserves was virtually unknown prior to the delimitation Agreements.

98. A small area adjacent to Belgium remains undelimited. Outside the North Sea as herein defined delimitation among littoral States has not yet been agreed. The U.K. and France dispute concerning delimitation of the Western Approaches to the Straits of Dover is to be decided by an arbitral tribunal--a decision

TABLE III-1

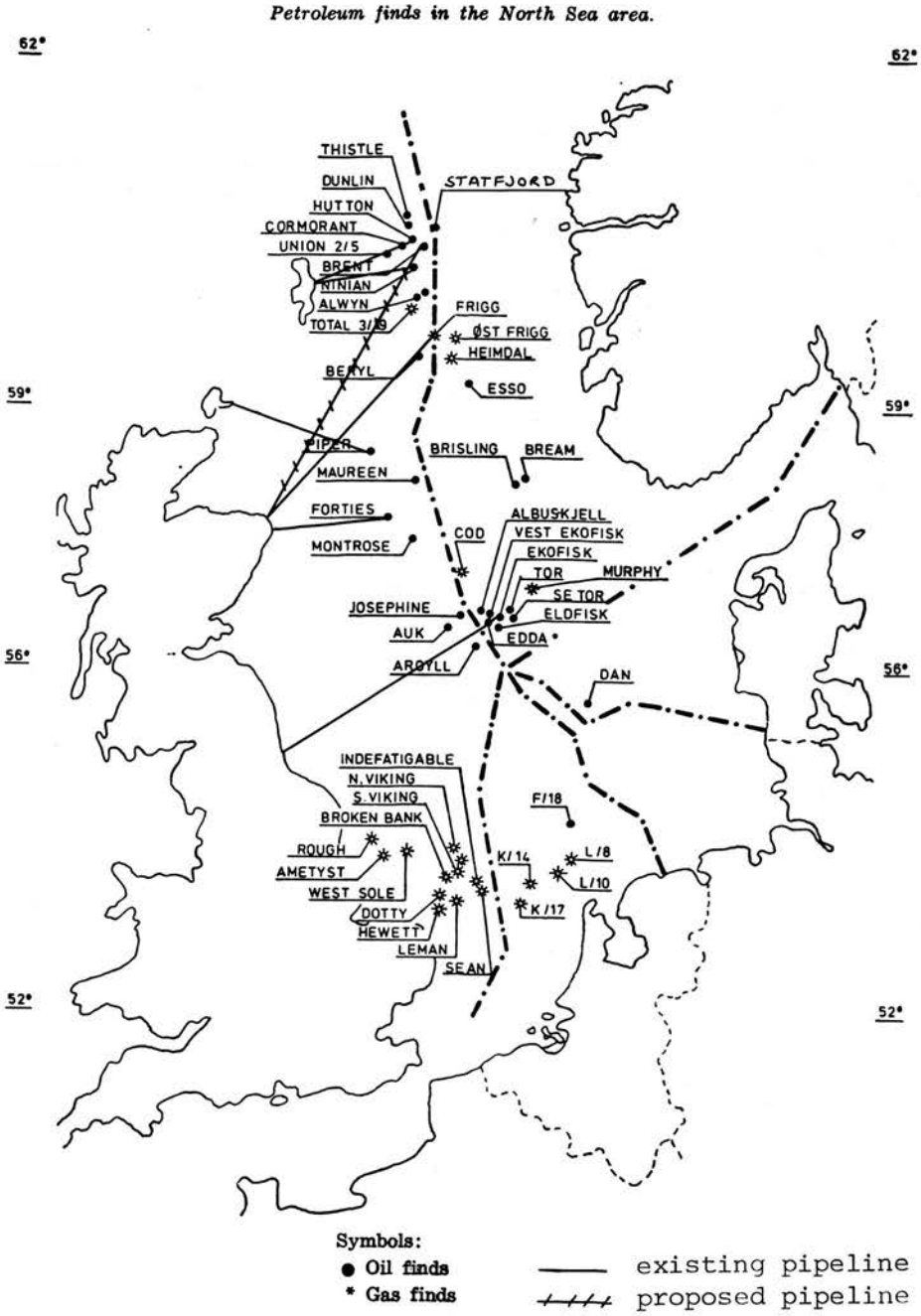
TREATIES RELEVANT TO THE DELIMITATION OF THE U.K. AND NORWEGIAN SECTORS OF THE NORTH SEA

Agreement	Delimitation Formula	Shared Deposit Provision	Dispute Settlement Provision
U.K.-Netherlands[1]			
6-10-65	Equidistance		Consultation (installations)
6-10-65		Yes	Arbitration (shared deposits)
25-11-71	Equidistance		
U.K.-Denmark[2]			
3-3-66	Equidistance	Yes	Agreement (shared deposits)
25-11-71	Equidistance	Yes	Agreement (shared deposits)
U.K.-Germany[3]	Equidistance	Yes	Consultation (installations)
U.K.-Norway[4]	Equidistance	Yes	No
Norway-Denmark[5]			
8-12-65 24-4-68	Equidistance	Yes	No

1. Cmnd. 3253 (1967), Cmnd. 3254 (1967), Cmnd. 5173 (1972).
2. Cmnd. 3278 (1967), Cmnd. 5193 (1973).
3. Cmnd. 5192 (1973). The original delimitation formula between the U.K. and Denmark and the U.K. and the Netherlands was based on equidistance. The U.K. merely substituted Germany for Denmark and the Netherlands following agreement among those three States.
4. Cmnd. 2757 (1965).
5. 634 *United Nations Treaty Series* 71 (1968), *ibid.*, p. 414.

FIGURE III-1

Petroleum finds in the North Sea area.



Source: Norwegian Ministry of Industry, *Report No. 30 to the Norwegian Storting* (1973-74), Map Appendix 2, at p. 109.

of a coastal State's continental shelf.[99] As Figure III-1 indicates, many of the major hydrocarbon reservoirs in the northern part of the North Sea cluster along the U.K.-Norwegian median line. Had the Norwegian Trough formed the outer limit of the Norwegian continental shelf, these major fields would have been subject to the exclusive sovereign rights of the U.K.

It is interesting to note that every bilateral agreement describing the U.K. and Norwegian sectors provides for exploitation of deposits which may be intersected by boundary lines. These provisions are quite general, obligating the Parties only to "consult" or "agree" on methods to develop the deposit. In the case of the U.K. and Norway, common deposits have been discovered under the sectors of both Parties, and additional agreements have been and are being concluded.[100]

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which must consider the possible "special circumstances" of the British Channel Islands off the French coast. The Anglo-French Arbitration Agreement is published by H.M.S.O. in Cmnd. 6280 (1975). The U.K.-Norwegian boundary is undefined above 61° 44' 12".

99. *I.C.J. Reports* (1969), paras. 32, 46, 69, 81. In the *North Sea Cases* the I.C.J. found that the Federal Republic of Germany was not obliged to accept the equidistance formula of continental shelf delimitation submitted by her adjacent neighbours Denmark and the Netherlands, because:

    1. Germany, though a signatory to the Convention, had not ratified it nor otherwise accepted it, nor had the equidistance method become international customary law.
    2. There was no particular delimitation formula which had emerged as international customary law.

    Following the Court's decision, the three litigants reached an agreement which recognised German sovereign rights in a specified area extending to the opposite State's (U.K.'s) median line. This necessitated a new U.K.-German Agreement as well as additional U.K.-Denmark and U.K.-Netherlands Agreements to account for the extension of the German sector to the median line.

100. Article 4 of the U.K.-Norway Agreement provides that if a single

The dispute settlement provisions in the delimitation agreement are also imprecise. The first U.K.-Netherlands Agreement and the U.K.-Germany Agreement provide for "consultations" in the event of a dispute involving the positioning of installations near the boundary line. The second U.K.-Netherlands Agreement of 1965 is devoted entirely to settlement of disputes involving deposits which straddle the boundary line. Should the parties fail to reach agreement pursuant to specified criteria, provision is made for arbitration. However, only disputes which may prevent maximum recovery from the deposit are subject to arbitration, and the question of whether a field may be so classified will itself be subject to agreement. Moreover, as has been pointed out by an authority on arbitration, the "preliminary question" is a hurdle which is frequently difficult to clear.[101]

Both the U.K.-Denmark Agreements provide that in the event of a dispute concerning a shared deposit, the Parties shall seek to reach agreement, an objective unencumbered by procedural criteria or guidelines. The drafting of these provisions suggests that a high priority has not been placed on the inclusion of formal dispute settlement procedures in the delimitation Agreements. It may be that the Parties thought that such provisions would be better left to *ad hoc* formulation when the need arose. Support for this hypothesis may be found in the provisions of bilateral Agreements concerning pipelines and shared

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geological structure, including a petroleum field, extends across a dividing line and is exploitable from the other side, the Parties shall, in consultation with the licensees, attempt to agree on the most effective method of exploitation and the allocation of proceeds. See below, p. 138.

101. Johnson, D.H.N., "The Constitution of an Arbitral Tribunal," 30 *British Yearbook of International Law* 152-177 (1953).

deposits which are discussed below.[102]

2. The Oslo Dumping Convention

This regional Convention controls the disposal of wastes at sea.[103] If a Draft Resolution of the Oslo Commission is approved, the Oslo Dumping Convention may regulate the disposal of wastes from seabed development activities. As the Convention is exclusively concerned with "dumping" of substances from "ships and aircraft," the definitions of these terms provided by Article 19 will determine to what extent the Convention may apply.

Article 19(2) includes within the expression "ships and aircraft," "floating craft whether self-propelled or not, and fixed or floating platforms." The various "installations or devices" used in offshore oil development are therefore clearly included.

"Dumping" is defined in the pertinent Article as

> "any *deliberate* disposal of substances and materials into the sea by or from ships or aircraft *other than*:
> a) any discharge *incidental to* or *derived from* the normal operation of ships and aircraft and their equipment."[104]

The *accidental* loss of anchors, cables, oil drums, etc. is not "dumping" nor, more importantly, is any discharge "incidental" to normal operations. The meaning of "incidental" is therefore of great importance in determining the extent to which "fixed or floating platforms" are subject to the Oslo Dumping Convention.

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102. See below, p. 136.

103. The Oslo Convention is discussed more fully below, at p. 205. North Sea States Parties include the U.K., Norway, Denmark, the Netherlands and France. Belgium and Germany are expected to ratify the Convention in 1977.

104. Article 19(1)(a). Emphasis added.

The plain meaning of the word "incidental"[105] is consistent with an interpretation which would include discharges of substances as a direct result of petroleum exploitation activities within the definition of "dumping." Vessel or platform discharges such as sewage and garbage are *associated* with seabed development, but they are not *part* of the actual exploitation activity: they are incidental to it. The disposal of oil-related substances at sea (for example, oil drums, cables, etc.) to simplify supply logistics is a closer case. If such items are as a matter of course disposed of at sea it is difficult to argue that this activity is "incidental" to seabed development. On the other hand, the occasional disposal at sea of items from supply boats or platforms is arguably not an integral part of the seabed development process (especially if done by an employee who is aware that what he is doing is both illegal and contrary to company regulations). The systematic discharge of shavings from pipe-laying barges and the disposal of oil-related debris from vessels and platforms is distinguishable in degree, if not in kind, from the examples just mentioned. Clearly such activities are part of the seabed development process. They are *not* incidental to it.

At the third meeting of the Oslo Commission it was recommended

> "that disposal of pipes, metal shavings and other material which may present a serious obstacle to fishing or navigation (*cf.* Annex II(1)(b) of the Convention), resulting from off-shore hydrocarbons exploration and exploitation operations, should be

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105. "Casual, not essential," *The Concise Oxford Dictionary*, Clarendon Press, Oxford (1956). "Secondary or minor, but usually associated," *Webster's New World Dictionary*, World Publishing Co., New York (1962). The *travaux préparatoires* of the Oslo Convention are not available to the public. Letter from Mr. G.F. Buxton, Secretary, Oslo Commission, to the writer, 6 March 1975.

> regarded as acts of deliberate disposal pursuant to Article 19, and thus falls under the scope of the Oslo Convention."[106]

This Draft Resolution was advocated because of perceived need and defended as being within the terms of the Oslo Convention because it is not expressly excluded. Thus, the Commission pointed out that although "fishermen of many nations are affected by what is dumped on the different countries' Continental Shelf areas," international agreements in force and awaiting sufficient ratifications to become effective are not addressed to the control of this form of pollution. The 1973 IMCO Convention, although applicable to vessels and platforms, was interpreted by the Commission to exclude waste from seabed operations from its scope and, in any event, was not yet in force.[107] The London Dumping Convention expressly excludes the disposal of wastes associated with development of seabed mineral resources.[108] The Paris Convention, even when it becomes effective, would be unsatisfactory because it does not apply to ships, and

> "Even if the convention might apply to the dumping of metal objects from platforms (Article 3(c)(iii)) it could not be a satisfactory framework because the problems of pollution for supply boats, pipelaying barges, craneboats etc. clearly fall outside the scope of the convention. It would complicate matters unnecessarily if the problems of bulky waste from oil-related activities on the Continental Shelf were to be dealt with under different conventions."[109]

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106. OSCOM (76) 13, Agenda item 7.

107. *Ibid.*, p. 2; 1973 IMCO Convention, Article 2(3)(ii), (4). The 1973 IMCO Convention is discussed below, at p. 133.

108. London Dumping Convention, Article II(1)(c). The London Dumping Convention is discussed below, at p. 209.

109. OSCOM (76) 13, Agenda item 7, p. 3. The Paris Convention is discussed below, at p. 134.

The Oslo Convention was thus nominated by default.

In concluding that the regulation of oil-related debris dumping could be included under the Oslo Convention, the Commission conceded that

> "Certain delegations might wish to observe that it was not the intention to let the Oslo Convention apply to waste or other matters directly arising from or related to the exploration, exploitation and associated off-shore processing of seabed mineral resources. It might further be argued that if the question had been given a more careful consideration during the elaboration of the Oslo Convention an explicit exception similar to Article III(c) in the London Convention would have been introduced in the Oslo Convention. Whatever merit this hypothetical line of argument might have it must be stressed that the wording of the convention does not exclude the type of dumping in question, and that following a strict interpretation of the convention it is difficult to exclude waste from the off-shore industry on the basis mentioned above."[110]

In considering the question of "incidental" activities, the Commission equated "incidental" with "normal" and concluded that "the most obvious interpretation" of the term as used in the Convention would be to exclude normal "ship" wastes, such as sewage, but not to exempt normal industrial wastes. This interpretation was said to be consistent with the framework to be established by the 1973 IMCO Convention and the Oslo and Paris Conventions: the IMCO Convention was intended to control the normal "ship" discharges not included as "dumping," and the latter two Conventions could and should therefore be interpreted as regulating industrial discharges.

The Commission did not decide how the Convention should be applied to the control of oil-related debris, but suggested as one possibility that such disposal be made subject to the requirement of

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110. OSCOM (76) 13, Agenda item 7, pp. 4-5.

a special permit.[111] The Convention provides that

> "Containers, scrap metal, tar-like substances liable to sink to the sea bottom and other bulky wastes which may present a serious obstacle to fishing or navigation"

may only be dumped pursuant to a "specific permit."[112] Such permits are issued by the national authorities and would, said the Commission, in practice be made contingent on the discretionary provisions in the Convention which authorise such authorities to require that dumping be done only in "deep water", that is, water which is at least 2,000 metres deep and at least 150 miles from the nearest land.[113] This requirement would exclude all regulated dumping from the North Sea.

In concluding the Draft Resolution, the Commission recognised the need to ensure that the suggested rules be followed. It was suggested that an expert group might be established to consider practical measures to control the disposal of oil-related debris. In addition, the Government of Norway appended a Note as Annex II to the Draft, registering its concern in particular about the disposal of metal shavings produced by pipe-laying barges and proposing some measures to facilitate implementation of the Draft Resolution. These suggestions, which are either in force or under consideration in the Norwegian regulatory system, include:

1. A requirement that containers and large metal objects be marked with the operator's name.[114]

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111. OSCOM (76) 13, Agenda item 7, p. 6. See also the discussion of the fund established by the U.K. Offshore Operators Association to compensate U.K. fishermen for damage to gear caused by oil-related debris, below at p. 256.

112. Oslo Convention, Annex II(1)(b).

113. *Ibid.*, Annex II(4).

114. OSCOM (76) 13, Agenda item 7, Annex II, para. 2.1, p. 2.

2. Requiring that containers be fitted with lids and that platforms have minimum storage capacity for containers.[115]

3. The introduction of a system of logging wastes transported.[116]

4. Inspection of the seabed during drilling, pipelaying, and production.[117]

3. The 1973 IMCO Convention

Although this Convention does not apply to "dumping" or releases directly arising from seabed operations, it does regulate the discharge of oil and the disposal of garbage from fixed and floating platforms. Drilling rigs and other platforms are treated as ships, and must therefore comply with the requirements of the Convention applicable to vessels of 400 gross registered tons (GRT) and above, other than oil tankers.[118] It is expressly provided that insofar as practicable, they shall be fitted with the oil discharge monitoring and control systems, oily-water separation equipment, and tanks for oil residues which are required for ships of 400 GRT or more.[119] The oil-water separation equipment must produce an oil in effluent content of no more than 100 parts per million, the 1954 IMCO Convention standard. It is therefore subject to the same criticisms as that standard.[120] Drilling rigs and platforms subject to this Regulation must also keep

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115. OSCOM (76) 13, Agenda item 7, Annex II, para. 2.2, p. 2.

116. *Ibid.*, para. 2.3.

117. *Ibid.*, paras. 2.4, 2.5, 2.6.

118. 1973 IMCO Convention, Annex I, Regulation 21.

119. *Ibid.*, Regulations 16 and 17 of Annex I.

120. See below, p. 155.

records of all operations involving the discharge of oil or oily mixtures.[121]

Fixed or floating platforms engaged in seabed operations, as well as vessels within the 500-metre safety zone, are prohibited from disposing of garbage in that area, except that ground food wastes may be disposed of when the *locus* is more than 12 nautical miles from land.[122]

4. The Paris Convention

The Convention for the Prevention of Marine Pollution from Land-based Sources (hereafter, the Paris Convention), was concluded at a Conference composed of most of the same States that are Parties to the Oslo Dumping Convention, which includes all the North Sea States.[123] The Paris Convention was opened for signature 4 June 1974 and will come into force 30 days after the seventh instrument indicating a willingness to be bound by that instrument is deposited.[124] The Paris Convention is interesting not only because it is being considered as a possible instrument to control pollution from offshore installations, but also as a regional response which, though a distinct Agreement, is *de facto* an expansion of the Oslo Dumping Convention. The identical geographical area is covered,[125] there is the same provision by which

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121. 1973 IMCO Convention, Annex I Regulation 21.

122. *Ibid.*, Annex V, Regulation 4.

123. Also included are *Austria*, Finland, Italy, *Luxembourg* and *Switzerland*. The italicized States are landlocked and therefore suffer lesser practical restriction.

124. Article 25(1).

125. Article 2.

the Parties agree to apply pollution prevention measures in such a way as to avoid transferring pollutants to marine areas outside the Convention area,[126] and there are annexed lists of pollutants classified by potential danger. It is of significance that persistent oil, not expressly included in the Oslo Dumping Convention Annexes, is specifically mentioned in the "black list" of most dangerous pollutants contained in Part I of Annex A,[127] and that non-persistent oils are a new addition to the "gray list."[128] The Parties to the Paris Convention will, therefore, be obliged to "undertake" to eliminate pollution of the sea by persistent oil from land-based sources, and to "limit strictly" similar inputs of non-persistent hydrocarbons.[129]

How is a Convention concerned with the control of pollutants from land-based sources applicable to the development of offshore mineral resources? The answer to this question depends upon the interpretation given to Article 3(c)(iii) of that instrument.

The "pollution from land-based sources" to which the Paris Convention applies means "the pollution of the maritime area," including that from

> "man-made structures placed under the jurisdiction of a Contracting Party within the limits of the area to which the present Convention applies."[130]

There is controversy concerning the precise meaning of this provision: can it be interpreted to include various types

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126. Article 7.

127. Annex A, Part I, 5.

128. Annex A, Part II, 3.

129. Article 4(1).

130. Article 3(c)(iii).

of drilling and production installations working on the continental shelf, or was it only meant to apply to artificial islands? A member of the Norwegian delegation has opined that "both opinions can be argued very soundly."[131] In his view, the question

> "will probably not be decided by a strict legal interpretation of the definition but [will] depend on whether a majority of the countries party to the convention feel that it is a suitable international instrument to deal with pollution from oil activities on the continental shelf."[132]

The present writer is persuaded by that observation, noting that a similar dominance of need and convenience over purely legal considerations appears to have resulted in the Draft Resolution of the Oslo Commission discussed above. Should it be decided that the Paris Convention does apply to offshore installations, the inclusion of persistent and non-persistent oils and hydrocarbons in Annex A will provide the coastal State with the *obligation* to regulate operational discharges of oily water as well as dumping of unwanted substances and materials.

5. Bilateral Agreements

The Ekofisk and Frigg Agreements between the U.K. and Norway are concerned with the transportation of hydrocarbons from the Norwegian sector to the U.K. and, in the case of the Frigg Agreement, with the development of a deposit which straddles the boundary line dividing the two areas. This brief account of the two Agreements is particularly concerned with the prevention and control of pollution from pipelines

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131. Hambro, C., "International Conventions Relating to Pollution Resulting from Offshore Oil Activities in the North Sea Area," a paper presented at the Offshore North Sea Conference, 1976. at p. 8.

132. The question is being studied by an interim commission. *Ibid.*

and deposits which may involve the interests of both States.

a) The Ekofisk Agreement[133]

As indicated by Figure III-1, the Ekofisk Field and related deposits are located completely within the Norwegian sector. However, the Norwegian Trough has made submarine pipelines to Norwegian landfalls economically, if not technically, unfeasible.[134] In consequence, the Norwegian Government has concluded this Agreement with the U.K. which provides for a pipeline to transport petroleum from the Ekofisk Area to a refinery at Teesside, England. After an initial period during which transportation was effected by tanker directly to Norway, the pipeline was completed, and it is now in use.

The pipeline is subject to Norwegian licence over its entire length and U.K. licence within the U.K. sector.[135] The pipeline company must be Norwegian,[136] but the pipeline is subject to Norwegian and British concurrent jurisdiction.[137] Routeing of the pipeline, important both from the standpoint of conflict with other ocean users and possible marine pollution resulting from damage caused by such conflict, is subject to the agreement of the two Governments.[138] All pipelines, including those which feed into the main trunk line, "shall to the extent possible be subject to a uniform safety

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133. Signed 22 May 1973, effective on the same date. Cmnd. 5423 (1973); 13 *International Legal Materials* 26-30 (1974).

134. See below, pp. 432-433.

135. Article 2.

136. Article 3(1).

137. Article 4.

138. Article 7.

standard."[139] When the Norwegian Government decides to terminate use of the pipeline, it is responsible for removing it, unless the U.K. agrees to assume control for purposes of transporting petroleum from its own sector exclusively.[140] The removal provision satisfies the requirement of Continental Shelf Convention Article 5(5) that "(a)ny installations which are abandoned or disused must be entirely removed."

A Commission consisting of three representatives from each State is responsible for administering the Agreement.[141] Provision is also made for the settlement of disputes by arbitration.[142]

The Ekofisk Agreement is of modest scope. It does not *require* uniform standards for pipelines, although substantial agreement has been reached in this regard, and lack of uniformity has caused no difficulties in practice. It is also noteworthy that the issue of civil liability for damage caused by the Ekofisk pipelines is left to national and customary international law. The Ekofisk pipelines will be subject to the 1976 Civil Liability Convention (discussed in Chapter Four), but it is regrettable that an interim provision concerned with compensation was not included in the bilateral Agreement.

b) The Frigg Agreement[143]

The Frigg gas field straddles the U.K.-Norwegian boundary line. This Agreement concerns development of the shared deposit as well as its transmission to the United Kingdom.

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139. Article 8.

140. Article 10(2), (3).

141. Article 24(1).

142. Article 25.

143. Cmnd. 6491 (1976).

The most important provision of the Agreement relating to pollution control is Article 23 which provides:

> "The two Governments undertake to make every endeavour jointly and severally, after consultations, to ensure that the exploitation of Frigg Gas or the operation of any installation or pipeline involved in that exploitation shall not cause pollution of the marine environment or damage by pollution to the coast-line, shore facilities or amenities, or vessels or fishing gear of any country."

The Agreement contains a number of provisions which promote pollution prevention by requiring some effort toward uniform construction and safety standards, but most of the legal provisions relevant to pollution control are contained in the national legislation of the two States.

Part I of the Agreement provides, in essence, that the Governments shall exploit the field as a single unit and shall attempt to agree on apportionment of the reserves before the commencement of production.[144] Although each State retains jurisdiction over installations located in its own sector[145] (with the consequence that U.K. law applies to U.K. installations and Norwegian law to Norwegian installations), the two Governments are required to consult one another for the purpose of agreeing upon uniform safety and construction standards for installations and pipelines.[146] Inspectors of both Governments are granted access to all installations in the field, an inspector from one Government may request an inspector from the other Government to exercise his powers, and inspectors are empowered to

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144. Articles 1 and 2. Each Government must require its licensees to enter into agreements with licensees of the other Government to give effect to this Agreement.

145. Article 29.

146. Articles 7(1), (2); 17(1).

order the cessation of any or all activities if in his judgment such action is necessary to avert or minimise an accident involving danger to life.[147] In practice, relations between the two Governments have been harmonious and informal: A great deal of the daily regulation of activities is done by telephone.[148]

Part II of the Agreement is concerned with "Transmission of gas from the Frigg Field Reservoir." Provision is made for two pipelines, Norwegian and British, which run from the respective sectors to St. Fergus, Scotland. The provisions in the Agreement concerning the Norwegian pipeline are similar to those discussed in connection with the Ekofisk Agreement: The Norwegian pipeline must be owned by Norwegian legal entities, it is subject to Norwegian civil and criminal law although concurrent U.K. jurisdiction is not excluded,[149] the pipeline route is subject to approval by both Governments,[150] the two Governments are required to consult with one another regarding uniform construction and safety standards for the two pipelines,[151] and they are obligated to appoint inspectors to ensure compliance with such standards.[152] This Agreement is also similar to the Ekofisk Agreement in that provision is made for a six-person Commission which is responsible for implementation, and a three-person arbitral tribunal may be constituted at the request of either Government to settle disputes not

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147. Article 8.

148. Conversation with Mr. Nils Vogt, Norwegian Petroleum Directorate, 24 November 1976.

149. Article 13(2).

150. Article 13(3).

151. Article 17(1).

152. Article 18(1).

resolved by the Commission.[153]

6. Conference on Safety and Pollution Safeguards in the Development of North-West European Offshore Mineral Resources

In March, 1973 a group of delegates representing North-West European States met in London to discuss issues of common interest concerning the development of offshore mineral resources. Papers were presented and discussed over a two-week period in respect of two major issues: technical and safety aspects of pollution control, and civil liability for pollution damage. At the conclusion of the Conference it was decided to begin preparations for conventions concerned with each of these two aspects of marine pollution from offshore mineral development.[154] The paragraphs below are a brief account of preparations for a regional convention to control pollution.

The Conference concluded that the present situation, in respect of pollution control from seabed operations, required a coordinated approach among the North-West European countries.[155] It should be an objective that uniform standards affording the greatest possible protection be established as soon as possible.[156] The concerned States should examine the requirements for a regime incorporating such standards, communicating their activities directly and during such international discussions as those of IMCO, ICES, ILO and the UN.

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153. Articles 27, 28.

154. Conversation with Professor Carl August Fleischer, 12 November 1976.

155. SPC (73) 18 Final, para. 1.

156. *Ibid.*, para. 2.

In the light of the above conclusions, it was recommended that:

1. Relevant information be freely exchanged among those North-Western European States that have or contemplate offshore operations.

2. Working Parties should consider environmental protection, including those areas in which national safety requirements may differ, and should assign "the freedom of movement of mobile installations and equipment" priority in the list of issues to be considered.

3. It should be considered whether a regional agreement is possible when the working groups have made satisfactory progress.

4. A further conference of the countries concerned should be convened, perhaps in 1975, to review developments and plan for the future.

Three Working Groups were formed: WG 1 was concerned with environmental matters (for example, collection and evaluation of data and environmental criteria relevant to the design of offshore installations), WG 2 was to consider construction and use of offshore facilities, and WG 3 was to deal with personnel safety, health and welfare.[157] WG 2, chaired by Mr. Nils Vogt, is of particular relevance.

WG 2 is charged with examining existing and proposed national requirements for construction and use of offshore installations, with especial reference to mobile installations.[158] The major objective of this Group is to determine how far national standards can be made uniform. Specific areas of investigation include:

1. Monitoring of design and construction.

2. Design strength, seaworthiness and stability of main structure and strength of integral parts.

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157. Annex to Working Papers.

158. Appendix II.

3. Equipment installed including oil/water separation equipment to operate within specified standards for maximum permissible oil content in discharged waters.

4. Underwater technology.

5. Movement of installations.

6. Hazards from ships.

The Working Groups have completed their tasks, and the Conference planned for 1975 (but not convened) will now probably meet in the Netherlands in mid 1977.[159] There is wide agreement on the standards set by WG2, but Governments hold differing views on the question of whether such agreement should be memorialized in a Treaty or ought to be informal. It is possible that IMCO may assume responsibility for an Agreement, thus expanding its scope beyond North-Western European States and providing established administrative machinery.[160]

7. UNCLOS III: RSNT Articles relevant to control of pollution from seabed operations

It will be recalled that the RSNT is a procedural device intended to facilitate agreement and does not represent accepted proposals itself. Indeed, many proposals are extremely controversial. Committee II considered a number of priority questions in its fifth session, including the legal status of the EEZ, definition of the outer edge of the continental margin, and delimitation of the territorial sea, the EEZ and the continental shelf between adjacent or opposite States.[161] The definition of the outer limits of the

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159. Conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976.

160. *Ibid.*

161. A/COND.62/L.17, paras. 11 and 12, pp. 2 and 3.

continental margin was a particularly controversial topic during the debates in that session.[162] Committee III was primarily concerned with the provisions of those Articles relating to protection and preservation of the marine environment from vessel-source pollution, including the competence of the coastal State to set standards for vessels in the territorial sea, the EEZ, and special areas of the EEZ, as well as the question of enforcement.[163] In view of the continuing debate over provisions of the RSNT, it is emphasised that, while the Text is an important indication of trends, great caution should be exercised in drawing conclusions based on it.

a) RSNT Articles concerned with the continental shelf

The RSNT provides that the continental shelf shall extend to the outer edge of the continental margin or 200 nautical miles from the baseline, whichever is farther.[164] The exploitability criterion has been removed.[165] Although this change would have no effect on the delimitation of the North Sea continental shelf, it would be relevant indeed to the U.K. and Norway as they seek to delimit their respective sectors in northern and western areas.[166]

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162. Rose, W., "The Continental Shelf and Margin," a paper presented to the Society for Underwater Technology Sea Law Group Conference, 2 December 1976.

163. A/CONF.62/L.18, paras. 7 and 8, pp. 2 and 3.

164. A/CONF.62/WP.8/Rev.1/Part II (hereafter, Committee II), Article 64.

165. It will be recalled that the 1958 Convention employed a 200 metre depth or exploitability delimitation criterion. An excellent account of the present Continental Shelf Convention is provided by Gutteridge, J., *op. cit.* in footnote 94.

166. Another modification of the Geneva Convention determination of

The coastal State would be expressly empowered to take reasonable measures to prevent pollution from "pipelines" on its continental shelf, thus reducing an ambiguity in the present Geneva Conventions which on one hand declare that all States enjoy the right to lay submarine pipelines beneath the high seas,[167] and note the customary law obligation to enact legislation to control pollution from "pipelines" on the other.[168] The coastal State is also given control over pipeline routeing on its continental shelf, thus clarifying the High Seas and Continental Shelf Conventions.[169]

b) RSNT Articles concerned with the EEZ

The Exclusive Economic Zone (hereafter, the EEZ) is a proposed area outside the territorial sea, extending from the baseline 200 nautical miles.[170] Although delimitation of the U.K. and Norwegian EEZ in the North Sea need not necessarily conform to the present con-

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continental shelf area of great importance to the U.K. outside the North Sea concerns islands: although islands are still accorded a continental shelf in the proposal, "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf." Committee II, Article 128(3). Should this provision be adopted, the present and planned use by the U.K. of the tiny rock "Rockall" to extend the area of her continental shelf and EEZ would have to be supported by resort to other arguments, for example, that the Rockall Plateau is a "natural prolongation" of Scotland within the meaning of the *North Sea Continental Shelf Cases* or Committee II, Article 64 and therefore appertains to the U.K.

167. High Seas Convention, Articles 2, 26; Continental Shelf Convention, Article 4.

168. High Seas Convention, Article 24. The RSNT provision is Article 67(2) in the Committee II Text.

169. Committee II, Article 67(3); High Seas Convention, Article 26; Continental Shelf Convention, Article 4.

170. Committee II, Article 45.

tinental shelf sectors, the fact that all boundaries were established according to a principle of equidistance certainly conforms to the requirement that EEZ delimitation

> "be effected by agreement in accordance with equitable principles, employing, where appropriate, the median or equidistance line, and taking account of all the relevant circumstances."[171]

Within the EEZ the coastal State would have:

> "(a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether renewable or non-renewable, of the bed and subsoil and the superjacent waters;
>
> (b) exclusive rights and jurisdiction with regard to the establishment and use of artificial islands, installations and structures;
>
> (c) exclusive jurisdiction with regard to:
>
> (i) other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; and
>
> (ii) scientific research;
>
> (d) jurisdiction with regard to the preservation of the marine environment, including pollution control and abatement
>
> .... ."[172]

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171. Committee II, Article 62(1). The Denmark/German/Netherlands lateral boundaries were established by negotiation and do not follow the equidistance principle. It is a matter for speculation whether Germany's two North Sea neighbours would be willing to concede EEZ area to conform to the relinquished continental shelf area. If it appears likely that within the North Sea the U.K. and Norwegian EEZs will be geographically identical with their continental shelves, the same may not be true of areas extending into the North Atlantic. Although the EEZ is limited to 200 miles, it will be recalled that the continental shelf is only limited to this maximum if the continental margin does not extend beyond 200 miles. Thus, in areas in which the continental margin exceeds 200 miles, jurisdiction is limited to that concerning the continental shelf--which contains no pollution control jurisdiction provisions.

172. Committee II, Article 44. The three RSNTs are not coordinated, so that there are occasional instances of overlap, as is the case

It is evident from the above abstraction that the coastal State is given considerably greater authority in the EEZ than in the continental shelf area. "Sovereign rights" include those for the purpose of conserving and managing all natural resources, thus extending functional jurisdiction to fisheries. More relevant to this thesis, however, is (b) which clearly indicates that only the coastal State may erect installations in the 200 nautical mile zone, and moreover, that such structures can be placed in the EEZ for any purpose (for example, a nuclear power station on an artificial island).[173] Item (d) is welcome because it proposes to confer express jurisdiction on the coastal State to control pollution in an area extending 200 miles from the coast. But it is important to note that the coastal State would only be granted "jurisdiction"--not "exclusive jurisdiction." As will be seen later, the RSNT contemplates shared jurisdiction in the EEZ with the flag State. Furthermore, although the coastal State would be authorised to take reasonable measures to prevent pollution from pipelines on the continental shelf, no such powers are conferred in respect of vessels in the EEZ. Finally, it is of interest to note that where the continental margin extends beyond 200 miles, the coastal

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here where both Committee II and Committee III are concerned with coastal State control of marine pollution. It is also of interest to note that although the coastal State has sovereign rights in respect of both renewable and non-renewable resources within the EEZ, the proposal contained in Article 51(2) would require a coastal State to determine its capacity to harvest living resources in the EEZ and to "give other States access to the surplus of the allowable catch." There is no comparable provision in respect of non-living resources.

173. Committee II, Article 48 elaborates coastal State jurisdiction over installations in the EEZ and Article 68 provides that such rights also apply on the continental shelf, thus covering the possible case of a continental shelf which extends beyond 200 miles.

State would have no jurisdiction over foreign flag vessels. As is the case today, exclusive jurisdiction to prevent pollution from vessels on the high seas would rest with the flag State.[174]

c) RSNT Articles concerned with the high seas

Committee II Article 76(1)(d) provides that although freedom to construct artificial islands and other installations is a recognised freedom of the high seas, it is subject to the regime of the continental shelf. Thus, although when it extends beyond the EEZ the continental shelf lies beneath the high seas, the coastal State would retain the exclusive right to construct and operate installations in such an area.[175]

d) RSNT Articles concerned with standards

One of the most contentious issues at UNCLOS III is that of setting standards for marine pollution control. The crux of the issue is, who should set such standards? Many coastal States understandably take the view that they are in the best position to determine needs and to enforce compliance. This view is not beyond challenge even if the larger question of the best interests of the international community is ignored. Most coastal States are developing. They are not in a position to set environmental protection standards predicated upon empirical investigation; indeed, they must import technology to comply with existing international environmental standards such as those in the IMCO Conventions. Moreover, even the developed States are finding it difficult to assume the burden of unilateral enforcement in a 200 mile band of coastal waters. It is suggested that internationally

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174. It could also rest with a proposed Seabed Authority.

175. This is confirmed by Articles 48 and 68 cited in footnote 173.

agreed standards are more likely to be observed by States involved in their formulation, and uniformity may aid mutual enforcement as well.

In considering the international community, two points are noteworthy. First, although it is true that, as Canada has claimed in defence of her Arctic Waters Pollution Prevention Act, unilateral action may be necessary in order to set high standards that would become compromised in an international agreement, it has also been observed that in the absence of international obligation, some States may become "coasts of convenience" which permit degradation of adjacent waters for economic gain.[176] Internationally agreed standards may certainly be diluted by such States, and it is conceded that unless international standards became customary law "coast of convenience" States could simply refuse to be bound by a treaty thought to be inimical to their best interests. Conversely, it may be that complete coastal State freedom to set standards unilaterally would be less effective in protecting the total marine environment. On balance, it appears that preservation of the earth's interdependent and continuous marine environment would be best served by internationally set standards, including those for "special areas."

The second point is a corollary of the first: it is clear that environmental protection has an economic cost (though, unhappily for environmentalists, frequently there is not a corresponding environmental gain readily ascertainable in dollars, pounds, or kroner) that few States would voluntarily assume if other States did not. A drilling

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176. Hallman, R., "Environmental Regulation of Marine-Based Activities (Non-Vessel) in Areas of National Jurisdiction," in Stein, R. (ed.), *Critical Environmental Issues on the Law of the Sea*, International Institute for Environment and Development, London (1975), para. 9 at p. 15.

rig which is required to be equipped with expensive pollution control devices may well be relegated to storage in a quiet Norwegian fjord while its less concerned competitors win contracts to drill off coasts of convenience.

Article 18 in Part III of the RSNT is concerned with standards to prevent pollution from seabed operations. This proposal would require all coastal States to establish national laws to control pollution from "sea-bed activities subject to their jurisdiction" and from "artificial islands, installations and structures under their jurisdiction."[177] Such laws would be "no less effective" than "generally accepted" international standards. All States (not just coastal States Parties) would be obligated to "establish global and regional rules" to control such pollution.

It is evident that this scheme is designed to put a "floor" on pollution control standards by the use of a "no less effective" provision. The intent of this ambiguous proposal is that standards could vary so long as they were above the minimum. The establishment of minimum standards by reference to "generally accepted international rules" is fraught with danger, however, for although there is an unequivocal obligation on all States to set such standards, there is no mention of how soon this must be done. Moreover, there is no standard of "general acceptance." For example, it is unclear whether a signed but unratified convention would provide obligatory minimum standards. Nor is the case of voluntary compliance with a convention free from doubt; for example, would wide acceptance of the International

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177. A/CONF.62/WP.8/Rev.1/Part III (hereafter, Committee III), Article 18(1).

Chamber of Shipping "Pollution Prevention Code" (intended to implement some of the 1973 IMCO Convention provisions on a voluntary basis) qualify the Convention or the Code as "generally accepted" international standards? The criteria for evaluating the general acceptance of conventions would probably include the number of ratifications required, the number received, and the period since the instrument was opened for acceptance. It is relevant to note here that a State which has only signed but not ratified or otherwise signified acceptance of a convention is not bound.[178] And, it may also be pointed out that conventions can require protracted periods of time to become effective; for example, the 1969 IMCO Amendments (discussed below) will not come into force until January, 1978.

C. Pollution from Tankers and Support Vessels

1. The 1954 IMCO Convention[179]

a) background

The International Convention for the Prevention of Pollution of the Sea by Oil (hereafter, the 1954 IMCO Convention) resulted from U.K. concern about the increase of coastal marine pollution in the years following World War II. In 1952 the British Government appointed the "Faulkner Committee" to

> "consider what practical measures can be taken to prevent pollution by oil of the waters around the coasts of the U.K. and to report."

The *Faulkner Report*,[180] published in July, 1953, concluded that the

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178. *Cf.* the *North Sea Continental Shelf Cases*, *supra* at p. 95.

179. Cmnd. 595 (1958), 327 *United Nations Treaty Series* 3-33. In force 26 July 1958. Both the U.K. and Norway are Parties.

180. Committee on Prevention of Pollution of the Sea by Oil (Chairman: P. Faulkner, CB) (1953).

best approach to the problem was to attempt to conclude an international agreement aimed at controlling the discharge of persistent oils by vessels.[181] In 1954 a Conference was convened under the auspices of the British Government. The Convention which resulted was later deposited with IMCO after that Organisation had come into being.

The 1954 IMCO Convention was the first and is still the most widely ratified international convention intended to control the problem of marine pollution. At this writing 58 States owning some 90-95 per cent. of world sea-going shipping are regulated by its provisions.[182]

b) summary[183]

The Convention was amended in 1962 and, as all Parties to the original instrument have accepted the amendment as well, the discussion of the 1954 IMCO Convention below includes the 1962 Amendments.[184]

The 1954 IMCO Convention is concerned with regulating operational discharges[185] of certain oils or oily mixtures from ships in areas

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181. *Hansard*, H.L. Vol. 190, cols. 332-333, 14 December 1954; *Hansard*, H.C. Vol. 805, cols. 573-574, 30 October 1970.

182. IMCO Document OPC/Circ. 63, 10 December 1976.

183. The 1954 IMCO Convention has been described in detail by a number of writers (for example, Brown, E.D., *op. cit.* in footnote 3), and will therefore be only summarised in this thesis.

184. Cmnd. 3354 (1967), 600 *United Nations Treaty Series* 332-355. In force 18 May 1967, except for Article 14 which became effective 28 June 1967.

185. The prohibited act is a "discharge," defined as "any discharge or escape howsoever caused," Article I(1). The scope of this definition is considerably reduced by Article IV(b), pursuant to which an exception is provided for an escape "resulting from damage to a ship or unavoidable leakage, if all reasonable precautions have been taken after the occurrence of the damage or discovery of the leakage for the purpose of preventing or minimising the escape." This exception is wide enough to form the basis of a defence to almost any accidental leakage.

adjacent to the coast. Within designated zones,[186] and subject to exceptions,[187] it is illegal for a sea-going vessel registered with a Party to discharge crude, fuel, heavy diesel or lubricating oil in a concentration greater than 100 parts of oil per million parts of a mixture (ppm).[188]

Among the changes wrought by the 1962 Amendments was the expansion in breadth of the original 50-mile prohibited zones to 100 miles in many areas. The North Sea was already bordered along much of its coastline by a 100-mile zone; the replacement of 50-mile sections by the larger breadth zone in effect closed the entire semi-enclosed sea to tanker discharges.[189]

A second aspect of the 1954 IMCO Convention scheme to control operational hydrocarbon discharges from vessels is a requirement that each Contracting Government take "all appropriate steps" to provide oil reception facilities at ports for non-tankers,[190] to provide similar facilities for tankers at oil loading terminals,[191] and to insure

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186. Contained in Annex A to the Convention, "Prohibited Zones."

187. In addition to accidental discharge (mentioned in footnote 185), these include discharges to safeguard life, ship, or cargo as well as disposal of residue from purifying fuel or lubricating oil, provided that such disposal is made as far from land as practicable, Article IV(a)(c).

188. "Oil" and "oily mixture" are defined in Article I(l); Article III contains the prohibition of discharges within designated zones.

189. Annex A(2): "The following sea areas, insofar as they extend more than 50 miles from the nearest land, shall also be prohibited zones .... (b)(iii) The Norwegian, North Sea and Baltic Sea Zone shall extend for a distance of 100 miles from the nearest land along the coast of Norway *and shall include the whole of the North Sea* and of the Baltic Sea and its Gulfs." (Emphasis added.)

190. Article VIII(l)(a).

191. Article VIII(l)(b).

the adequacy of such facilities at repair ports for both types of vessel.[192] Both the U.K. and Norway have some facilities, but many observers think that they are inadequate.[193]

Enforcement of the Convention is exclusively by the flag State if the offence occurs on the high seas; however, it is expressly provided that the coastal State is not barred from acting in regard to incidents occurring within its territorial sea.[194] The enforcing State is to apply its own law, subject to the provision that penalties must be of sufficient severity to deter such offences and not less severe than penalties possible in respect of like offences within its territorial sea.[195]

The primary device used to detect offences is the Oil Record Book which must be kept for any tanker or other ship using oil as fuel.[196] When any of several specified operations involving oil occurs, the circumstances must be duly logged in the Oil Record Book.[197]

Inspection other than by the flag State may only be made while the vessel is within a port in the inspecting State's territory.[198]

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192. Article VIII(1)(c).

193. See below, pp. 354 and 478, footnote 209.

194. Article XI.

195. Article VI(2). As a check on this requirement, it is also provided that Parties must report to the Organisation the penalties actually imposed for a violation, Article VI(3).

196. Article IX(1). The form which the Oil Record Book must take is specified in Annex B to the Convention.

197. Article IX(2).

198. Article IX(5). The language of this provision is wide enough to permit inspection of a foreign vessel in an offshore terminal.

Should inspection reveal that the Oil Record Book was missing or that it contained an irregular entry, this could be used as evidence that an illegal discharge of oil had occurred.

c) comments

The 1954 IMCO Convention has been criticised on many grounds, the most important of which concern enforcement and scope. The major objection in regard to enforcement is that it is left to the flag State. Vessels flying "flags of convenience" are frequently sub-standard both in physical specifications and operating procedures--and are seldom prosecuted by the flag State for reported offences.[199] Moreover, even when the flag State is conscientious, detection is difficult[200] and the burden of proving that a discharge within the prohibited zone exceeded the permissible concentration is severe.

The limited scope of the 1954 IMCO Convention also significantly reduces that instrument's effectiveness to control marine pollution. The Convention does not apply to accidental spills or to discharges outside narrow prohibited zones. The "parts per million" formula still permits a significant quantity of oil to be discharged. There is no provision dealing with responsibility for pollution damage. Furthermore, "oil" is defined so narrowly that the more toxic refined petroleum products are not subject to the Convention, and only

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199. The U.S. Coast Guard's Environmental Impact Statement on the 1973 IMCO Convention noted that of seven vessels reported to their flag State, only two were proceeded against. Congress of the United States, Office of Technology Assessment, *Oil Transportation by Tankers: An Analysis of Marine Pollution and Safety Measures* (1975), at p. 78, footnote 1.

200. See footnote 288 at p. 360 for a comment on progress in the U.S. in overcoming the problem of detection.

certain categories of vessels are included.[201]

Some of the deficiencies concerning enforcement and scope have been and are the subject of attempted remedies in Amendments to the 1954 IMCO Convention, the 1973 IMCO Convention, and at UNCLOS III.

2. The 1969 Amendments to the 1954 IMCO Convention

In 1969 the IMCO Assembly by Resolution[202] adopted a number of Amendments to the 1954 IMCO Convention. The 1969 Amendments have only recently received the required ratifications, and will enter into force 20 January 1978.[203]

The 1969 Amendments will replace parts of oil per million parts of effluent as a measure of permissible discharge with an allowable discharge per mile formula. This change reflects increasing general concern about oil pollution reinforced by experimental evidence from the U.K. Department of Industry's Warren Spring Laboratory that the parts per million criterion was not an accurate indicator of potential environmental damage. A supertanker with a large capacity and high pumping rate could dilute large quantities of oil with sea-water and thus introduce oil into a limited area at an alarming rate. This was especially true if the vessel were stationary or slow

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201. The exemption of tankers of less than 150 GRT and other ships of less than 500 GRT, as well as naval vessels and ships on Government service is a significant loophole.

202. IMCO Assembly Resolution A.175 (VI).

203. British Institute of International and Comparative Law, "Bulletin of Legal Developments," 25 February 1977, p. 29, citing IMCO Press Release No. 1/77, 28.1.77. As of January 1977, 37 States had accepted the 1969 Amendments. IMCO Document OPC.3/Circ.30. Both the U.K. and Norway have accepted the Amendments, and the former State has voluntarily applied them to vessels flying its flag. So long as no discharges occur in "prohibited zones" there is no conflict with the 1954 IMCO Convention.

steaming.[204] The Warren Spring findings suggested that the amount of oil discharged, whether mixed with water or not, in relation to the distance travelled by a ship was a better indicator of potential environmental damage than the ratio of oil to water.[205]

"Oily mixture" is redefined by an amended Article I(1) to include effluent with *any* oil content, thus excising the 100 ppm requirement. The rules on discharge of oil and oily mixtures have been amended in respect of both tankers and other ships. Discharges from tankers are permitted *only* when:

> "(i) the tanker is proceeding *en route*;
> (ii) the instantaneous rate of discharge of oil content does not exceed 60 litres per mile;
> (iii) the total quantity of oil discharge on a ballast voyage does not exceed 1/15,000 of the total cargo-carrying capacity;
> (iv) the tanker is more than 50 miles from the nearest land."[206]

The North Sea will be better protected from damage caused by operational discharges of oil from vessels when the 1969 Amendments come into force. Although the area will no longer be a "prohibited zone," it should be noted that even when it enjoyed that status, discharges of less than 100 ppm concentration were permitted. The new litres per mile formula, complemented by the provision of a 50 mile *cordon sanitaire* will greatly increase environmental protection in

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204. *Hansard*, H.C. Vol. 805, col. 576, 30 October 1970.

205. *Ibid.*, at col. 577.

206. Article III(b). Subsection (c) of this Article provides that a tanker discharge *is* permissible if it is ballast from a cargo tank so cleaned that any effluent therefrom, if it were discharged from a stationary tanker into clean calm water on a clear day, would produce no visible traces of oil from tanker bilges is excepted, falling under the regulations which apply to all discharges from other ships.

the area.

The 1969 Amendments permit the use of the Load on Top system described above.[207] (At certain stages of the LOT procedure, discharges in prohibited zones could violate the maximum permissible limits of 100 ppm imposed by the 1954 IMCO Convention.) The newly "un-prohibited" centre of the North Sea would be unlikely to experience increased risk from LOT discharges because, even if they were found to be more damaging than discharges of 100 ppm which are presently permitted, the point would be academic. As discussed above, vessels in ballast in the North Sea are rarely in the area long enough to enable the oil/water separation prerequisite to any LOT discharge to occur.[208]

The 1969 Amendments also permit discharges from non-tankers when:

> "(i) the ship is proceeding *en route*;
> (ii) the instantaneous rate of discharge of oil content does not exceed 60 litres per mile;
> (iii) the oil content of the discharge is less than 100 parts per 1,000,000 parts of the mixture;
> (iv) the discharge is made as far as practicable from land."[209]

This represents a significant tightening of non-tanker discharge criteria; under the 1962 Amendments discharges must only be "as far as practicable from land."

The 1969 Amendments have taken an inordinately long time to

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207. See discussion of the LOT system, *supra*, at p. 23.

208. *Ibid.*

209. Article III(a).

receive the required ratifications to come into force. Paradoxically, one major reason for the delay is that many States claim to be preparing to approve the 1973 IMCO Convention (discussed below) instead.[210] This comprehensive instrument designed to replace the patched-up 1954 model contains a number of controversial provisions which have generated considerable debate. Resolution of problems preventing 1973 IMCO acceptance could take some time--far more than would be necessary to obtain the ratifications necessary to bring the 1969 Amendments into force. In consequence, the Ninth IMCO Assembly adopted a Resolution urging Governments to accept the 1969 Amendments,[211] a Resolution appended to the 1973 IMCO Convention advocated similar action,[212] and a number of organisations and writers have emphasised the value of the 1969 Amendments to protection of the marine environment.[213]

3. The 1971 Tanks Amendment[214]

The Amendments adopted on 15 October 1971 to the 1954 IMCO Convention concerning Tank Arrangements and Limitation of Tank Size (hereafter, the Tanks Amendment) is an attempt to minimise the loss of oil

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210. Another reason is that the influx of new members to the Convention has made it difficult to garner the required two-thirds majority necessary for amendment.

211. IMCO Assembly Resolution A. 348 (IX).

212. Resolution 1, adopted by the International Conference on Marine Pollution, 1973.

213. See, for example, Advisory Committee on Oil Pollution of the Sea, *Annual Report* 1975, pp. 6-7. IMCO is also concerned that the 1969 Amendments have not come into force and has repeatedly urged members to accept them (see, for example, MEPC III/WP.7, 27 June 1975).

214. Adopted pursuant to IMCO Assembly Resolution A. 246 (VII); Cmnd. 5071 (1971), 11 *International Legal Materials* 267-276 (1972).

likely to follow the rupture of a cargo tank. The Amendment, not yet in force,[215] specifies criteria for tank size and arrangement in respect of tankers for which the building contract was let on or after 1 January 1972, and those delivered after 1 January 1977. Vessels flying the flag of States which have accepted the Amendments (which means all Parties to the Convention, as acceptance has been made mandatory) must carry certificates which attest compliance. A vessel which does not carry the required certificate must be prevented from sailing by the flag State and may, after consultation with the flag State, be barred from coastal State ports and off-shore terminals. Both the U.K. and Norway have complied with an IMCO Resolution accompanying the Resolution setting out the Amendment urging Governments to implement the Tanks Amendment as soon as possible.[216]

4. The 1973 IMCO Convention[217]

a) background

The Convention for the Prevention of Pollution from Ships (hereafter, the 1973 IMCO Convention) was one of two instruments[218] resulting from an International Conference on Marine Pollution, convened in

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215. As of 22 October 1976 the Tanks Amendment had been accepted by 19 States, including the U.K. and Norway. Enclosure with a letter from Mrs. A. Meldrum, IMCO Public Relations Officer, 27 January 1977.

216. Resolution 11, adopted by the International Conference on Marine Pollution, 1973.

217. Cmnd. 5748 (1974); 12 *International Legal Materials* 1319-1444 (1973). Open for signature 15 January 1974.

218. The other was the Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil. See below, p. 195.

London in 1973. Although one can find inspiration for the Conference in Resolutions of the U.N. General Assembly[219] which evidence environmental concern, direct responsibility is traceable to a 1969 IMCO Resolution in which it was decided to convene a Conference in 1973 for the purpose of drafting a comprehensive Convention to control vessel-source pollution.[220]

The 1973 IMCO Convention is not in force, having been accepted only by three States at this writing,[221] nor is it likely to become effective for some years, primarily because of its technical requirements (discussed below). Despite this pessimistic prediction, some parts of the Convention which can be readily implemented (primarily those requiring the discharge per mile formula of the 1969 Amendments) have been incorporated in a voluntary "Pollution Prevention Code (Oil Tankers)" prepared by the International Chamber of Shipping (ICS).[222] Approximately 80 shipping companies have subscribed to the Code.[223] The writer believes that the Code is to be welcomed as a positive step towards an effective regime of environmental protection, although it is conceded that there is some force to the argument that compromise

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219. General Assembly Resolutions 2398, 2414, 2467 (XXIII). The U.N. Conference on the Human Environment Recommendation 86(e) is also relevant.

220. IMCO Assembly Resolution A. 176 (VI).

221. Jordan, Kenya and Tunisia had accepted the 1973 IMCO Convention as of 13 May 1976. IMCO Document MP/Circ. 5.

222. International Chamber of Shipping, "Pollution Prevention Code (Oil Tankers)," London (1976).

223. Horrocks, J., "The 1973 Marine Pollution Convention." *Marine Policy* (January 1977), pp. 52-60, at p. 60. Mr. Horrocks is with the Secretariat of the ICS.

may delay acceptance of the Convention *in toto*.

b) pollution control provisions

The 1973 IMCO Convention was intended to replace the 1954 IMCO Convention and its Amendments with a far more comprehensive instrument, one that regulated marine pollution caused by oil *and* other substances, whether resulting from operation *or* accident. The new Convention will apply to both vessels and fixed or floating platforms, but it expressly excludes discharges directly associated with seabed operations from its scope.[224]

The 1973 IMCO Convention also differs from its predecessors in that it contains detailed requirements for vessel equipment and construction--in fact, only about 10 of the 140 pages constituting the final document are devoted to the body of the Act; the remainder are technical Annexes, Protocols, and Resolutions.

Parties are required to enact national laws to apply Convention provisions to ships flying their flags.[225] The actual pollution control provisions are contained in five Annexes, only the first two of which must be accepted: Annex I, oil; Annex II, noxious liquid substances; Annex III, packaged substances; Annex IV, sewage; Annex V, garbage. These Annexes are described in pertinent part below.

i) Annex I

"Regulations for the Prevention of Pollution by Oil," sets

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224. Article 2(3)(ii). Although the definition of "ship" includes vessels "of any type whatsoever operating in the marine environment," individual Annexes exempt ships below various tonnages and there is the usual provision that the Convention is not applicable to warships or other ships owned or operated by a State and used on Government non-commercial service. Article 3(3).

225. Articles 1, 3(1), 4.

discharge standards for "petroleum in any form"--including the refined "white oils" hitherto exempt from IMCO regulation.[226] The formula used is substantially that of the 1969 Amendments, with the additional provision that the maximum permissible volume of oil which may be discharged has been reduced from 1/15,000 to 1/30,000 of capacity in the case of new tankers.[227] Two changes to the discharge regulations for non-tankers are noteworthy: First, the new provisions apply to ships of 400 GRT, whereas the 1954 IMCO Convention and the 1969 Amendments exempted vessels under 500 GRT. This change may close a large loophole, for many supply vessels operating in the North Sea fall into the 400-500 GRT class and have thereby escaped regulation as non-tankers under the Convention.[228] A second difference from the 1969 Amendments is that non-tankers are not subject to the discharge per mile formula, although the 100 ppm oil in effluent maximum remains. This relaxation of standards may not be too significant, however, for discharges remain permissible only while the ship is *en route*, and small vessels are unlikely to exceed the former limit of 60 litres of oil per mile in the required dilute effluent.

Five "special areas" have been designated in which only discharges of "clean ballast" are permitted. "Clean ballast" is ballast water which

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226. Annex I, Regulation 1.

227. Annex I, Regulations 1(6), 9(1)(a).

228. See below, p. 477. Annex I, Regulation 9(2) requires the flag State to ensure that "as far as practicable and reasonable," ships of less than 400 GRT should be equipped to comply with the provisions of the Convention applicable to non-tankers.

> "if it were discharged from a ship which is stationary into clean calm water on a clear day would not produce visible traces of oil on the surface of the water or on adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines."[229]

Clean ballast is also that in which the oil in effluent can be proven not to exceed 15 ppm, notwithstanding the presence of visible traces.[230] It is regrettable that, unlike the 1954 IMCO Convention provisions, the North Sea is not included in the 1973 Convention's list of prohibited areas.[231] The 50-mile belt of coastal waters remains an area into which no oil from tankers may be discharged, and a specific provision establishing a similar 12-mile zone for non-tankers replaces the "as far as practicable from land" provisions of the 1969 Amendments.[232]

The 1969 Amendments will permit the LOT procedure; the 1973 IMCO Convention will require it for existing tankers. Within three years following the Convention's entry into force, existing tankers must be fitted with slop tanks and oil discharge monitoring and control systems.[233] New tankers of 70,000 tons deadweight (DWT) must be fitted

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229. Annex I, Regulation 1(16).

230. *Ibid.*

231. Annex I, Regulation 10(1).

232. Annex I, Regulation 9(1)(b); *cf.* 1969 Amendments Article III (a)(iv). The 1954 IMCO Convention does require non-tankers to observe prohibited zones. The 1973 IMCO Convention also incorporates a list of exceptions similar to that of its progenitors. Annex I, Regulation 11.

233. Annex I, Regulation 15(1).

with segregated ballast tanks.[234] Other construction requirements for both existing and new tankers include regulations on "Limitation of Size and Arrangement of Cargo Tanks," a provision similar to the 1971 Tanks Amendment, and "Subdivision and Stability," an inclusion addressed to tanker safety.[235]

Tankers over 150 GRT and other vessels more than 400 GRT must be surveyed and certificated. An initial survey before the ship is put into service or before Certificate issuance is required; "periodical surveys" of vessel structure and equipment will be specified by the "Administration"[236] at intervals not to exceed five years, and "intermediate surveys" specified at intervals not exceeding 30 months are intended to ensure that equipment, including oil discharge monitoring and control systems, oily-water separators and oil filtering systems meet the requirements set out in the Annex.[237]

An "International Oil Pollution Certificate (1973)" is required for all tankers over 150 GRT and other vessels more than 400 GRT which sail to ports or off-shore terminals under the jurisdiction of other Parties to the Convention.[238] Certificates may be issued to the vessel of one Party by the Government of another Party, but it is expressly provided that Certificates may not be issued to the vessels of non-

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234. Annex I, Regulation 13(1).

235. Annex I, Regulations 24, 25. *Cf.* the brief description of the 1971 Tanks Amendment, above, at p. 159.

236. "Administration" means the Government of the State under whose authority the ship or platform is operating. Article 2(5).

237. Annex I, Regulation 4(1).

238. Annex I, Regulation 5(1).

Parties.[239] The form of the Certificate is specified in Appendix II to the Annex.[240] Certificate duration corresponds to that of "periodical surveys."[241]

The new Convention requires oil reception facilities at oil loading terminals, repair ports and other ports in which ships have oily residues to discharge.[242] Such facilities must be "adequate to meet the needs of the ships using them without causing undue delay to ships."[243] The locations and reception capacities are specified in extensive lists which will become obligatory one year after the Convention comes into force.[244] There are provisions requiring standard discharge connections to simplify the transfer of oil as well as detailed requirements for the maintenance of oil record books.[245]

ii) Annex II

"Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk" sets discharge criteria for substances which are classified according to their potential danger:

1. *Category A:* Substances which may "present a major hazard to either marine resources or human health or cause serious harm to amenities or other legitimate uses of the sea .... ." *[for example, tetraethyl lead]*

2. *Category B:* Substances which may "present a hazard

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239. Annex I, Regulation 6.

240. Annex I, Regulation 7.

241. Annex I, Regulation 8.

242. Annex I, Regulation 12(1).

243. *Ibid.*

244. Annex I, Regulation 12(2), (3), (4).

245. Annex I, Regulations 19, 20.

to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea .... ." *[for example, carbon tetrachloride]*

3. *Category C:* Substances which may "present a minor hazard to either marine resources or human health or cause minor harm to amenities or other legitimate uses of the sea .... ." *[for example, benzene]*

4. *Category D:* Substances which may "present a recognisable hazard to either marine resources or human health or cause minimal harm to amenities or other legitimate uses of the sea .... ." *[for example, ethyl acetate]*[246]

More than 400 "noxious liquid substances" have been evaluated to date in what is intended to be a continuing process, and are listed in Appendix II to Annex II. Unclassified liquid cargoes must be carried "under the most severe conditions proposed," that is, they are treated as Category A substances. A list of liquid substances that have been evaluated but found to fall outside Categories A-D *[for example, wine]* is appended to the Convention.[247]

Annex II is intended to regulate discharges of noxious liquid substances from vessels carrying such cargoes in bulk.[248] Separate provisions are made for each category, although all benefit from the same exceptions for safety, damage under certain conditions, and pollution control that qualify application of Annex I. In addition, the Baltic and Black Seas are designated as "Special Areas" and are subject to more stringent discharge regulations in the case of categories A, B and C.[249]

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246. Annex II, Regulation 3(1). See also Appendix I, "Guidelines for the Categorization of Noxious Liquid Substances."

247. Appendix III, "List of Other Liquid Substances Carried in Bulk."

248. Annex II, Regulation 2(1).

249. Annex II, Regulations 1(7), 5(7).

The discharge of Category A substances is prohibited.[250] If tanks containing Category A substances are to be washed, the residue must be discharged into a reception facility until the concentration is below a prescribed level and the tank is "empty".[251] The tank may then be washed at sea, provided that:

1. The tank is filled with water to at least five per cent. of its capacity.

2. The ship is proceeding *en route* at a speed of at least seven knots.

3. The discharge is made below the waterline.

4. The discharge is made at least 12 nautical miles from land in water of at least 25 metres depth.

The discharge of Category B substances is permitted when:

1. Done pursuant to procedures approved by the flag State. Procedures are to be "based upon" IMCO standards and must ensure that the concentration of the substance in the wake astern of the ship does not exceed 1 ppm.

2. The quantity of cargo discharged conforms to Government standards and in no case exceeds one cubic metre or 1/3,000 of the tank capacity in cubic metres, whichever is greater.

3. Requirements 2, 3, and 4 of Category A are satisfied.[252]

The regulations governing discharges of Category C substances differ from their Category B counterparts only in that the allowable concentration of the discharged substance in the ship's wake is increased to 10 ppm and the permitted maximum quantity of cargo discharged is raised to three cubic metres or 1/1,000, whichever is

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250. Annex II, Regulation 5(1).

251. Appendix II sets out the permissible residual concentration for each substance.

252. Annex II, Regulation 5(2).

greater.[253] Category D discharges are permitted when requirements 2, 3 and 4 are met.[254]

Vessels carrying noxious liquid substances in bulk are subject to survey and certification requirements similar to those discussed in connection with oil tankers.[255] This Annex lacks detailed provisions setting out vessel construction and equipment requirements and operating procedures, but Parties are obligated to enact "appropriate" national regulations in respect of these new vessel types.[256] Regulations for chemical tankers must contain at least all the provisions of the IMCO Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk.[257]

Parties to the Convention are required to appoint surveyors to check compliance with its provisions.[258] The essence of very detailed provisions setting out surveillance procedures is that compliance shall be monitored by referring to entries in a Cargo Record Book as well as observation. Tank washing at an oil reception facility required prior to the discharge of Category A substances must be certified by the surveyor and the concentration of tank effluent measured (unless it would cause "undue" delay to the ship).[259] On the other hand, the master is

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253. Annex II, Regulation 5(3).

254. Annex II, Regulation 5(4).

255. Annex II, Regulations 10, 11, 12.

256. Annex II, Regulation 13(2).

257. Annex II, Regulation 13(3); IMCO Assembly Resolution A.212 (VII).

258. Annex II, Regulation 8(1).

259. Annex II, Regulation 8(2), (3), (4).

responsible for logging discharges at sea.[260] The Cargo Record Book must be completed every time one of a list of specified transferring operations occurs and must be kept on board the ship in a place convenient for inspection.[261]

Finally, it should be noted that the Parties undertake to provide the reception facilities necessary to the successful operation of the Convention. Reception facilities for the noxious liquids carried must be provided at both cargo and repair ports to receive tank washings as well as slop tank discharges. This requirement differs from a similar provision in Annex I in that there are no guidelines to limit national Government discretion in the matter of determining need, and there is no time limit for compliance.

iii) Annex III

"Regulations for the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms, or in Freight Containers, Portable Tanks or Road and Rail Tank Wagons" (hereafter, Packaged Substances Regulations) is one of three optional Annexes. This Annex is far less detailed than Annexes I and II, consisting of only eight Regulations and no Appendices.

Packages are required to be "adequate" to protect the marine environment and must be durably marked with the technical name and with an indication that the contents are harmful.[262] The shipping documents must also use the technical name of the substances and must include a

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260. Annex II, Regulation 8(5)-(9).

261. Annex II, Regulation 9.

262. Annex III, Regulations 2, 3. Trade names are not to be used as descriptions and where possible identification shall be assisted by the use of U.N. numbers.

declaration attesting that the shipment offered for carriage is properly packed, marked and labelled.[263] Vessels carrying harmful substances must have a hazardous goods manifest on board, describing them and recording their location.[264] The master or owner of a ship may be required by national law to provide at least 24 hours notice to the appropriate port authority of his intention to load or unload such packaged goods as may be specified.[265]

The discharge of packaged substances, including their containers is prohibited except when necessary for vessel safety or saving life at sea.[266]

iv) Annex IV

"Regulations for the Prevention of Pollution by Sewage from Ships," is intended to reduce discharges of raw sewage into coastal waters.[267] To this end, ships of 200 GRT or certified to carry more than 10 persons are limited as follows:

1. If discharging sewage which has been comminuted and disinfected, such discharge may occur no closer than four nautical miles from land.

2. If discharging sewage which has not been comminuted and disinfected, such discharge may occur no closer than 12 nautical miles from land.

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263. Annex III, Regulation 4(1), (2).

264. Annex III, Regulation 4(3), (4).

265. Annex III, Regulation 8.

266. Annex III, Regulation 7, Resolution 19, "Recommendation Concerning the Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Forms or in Freight Containers, Portable Tanks or Road and Rail Tank Wagons," recommends studies on the problems of this potential source of pollution.

267. Annex IV is optional.

In either case, the sewage must have been stored in holding tanks and discharged at a moderate rate when the ship is *en route* at a speed of at least four knots, in accordance with national regulations based upon IMCO standards.[268] If the vessel has an approved sewage treatment plant certified by the flag State to meet IMCO standards sewage discharge can occur anywhere with no further requirements as to vessel speed, etc.[269] These discharge regulations do not apply to discharges necessitated by safety or life saving considerations, or resulting from damage under certain conditions.[270]

Vessels subject to Annex IV are subject to survey and certification in respect of sewage treatment equipment.[271] This Annex is similar to Annex I in that standard discharge connections are required,[272] and analogous to Annex II in respect of a provision which obligates Parties to undertake to provide reception facilities but leaves it to the State to determine need.[273]

v) Annex V

"Regulations for the Prevention of Pollution by Garbage from Ships" prohibits discharges:

1. Within 25 nautical miles of land for dunnage, lining and packing materials which will float.

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268. Annex IV, Regulation 8(1)(a).

269. Annex IV, Regulation 8(1)(b).

270. Annex IV, Regulation 9.

271. Annex IV, Regulations 3-7.

272. Annex IV, Regulation 11.

273. Annex IV, Regulation 10. Resolution 20, "Provision of Standards and Test Methods Concerning Discharge of Sewage," urges IMCO to develop standards and test methods as soon as possible.

2. Within 12 nautical miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse.[274]

Disposal of all plastics, including synthetic ropes, synthetic fishing nets and plastic garbage bags, is prohibited. More stringent regulations apply to the five "special areas" included in Annex I.[275] This Annex applies to all ships, and there are special provisions for fixed or floating platforms as well.[276] The familiar exceptions made for discharges necessary for safety or life saving and resulting from vessel damage have been complemented by a third exception: the accidental loss of synthetic fishing nets or repair materials, provided that all reasonable precautions have been taken to prevent such loss.[277] Governments of Parties undertake to provide adequate reception facilities and to report to IMCO instances in which such facilities are alleged to be inadequate.[278]

c) enforcement provisions

The IMCO Conference was greatly influenced by the second meeting of UNCLOS III which was scheduled for Caracas some seven months later. Nowhere in the Convention is this more evident than in the provisions for enforcement, which were deliberately left vague.

The flag State remains primarily responsible for enforcing the

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274. Annex V, Regulation 3(1). Annex V is optional.

275. Annex V, Regulation 5.

276. Annex V, Regulations 2, 4. See above, p. 134.

277. Annex V. Regulation 6.

278. Annex V, Regulation 7. Resolution 21, "Provision of Reception Facilities for the Discharge of Sewage and Disposal of Garbage," urges Governments to ensure reception facilities for sewage and garbage are adequate as soon as possible.

Convention. As in the 1954 IMCO Convention, although another State may request prosecution, it is the flag State which is the judge of whether "sufficient evidence is available to enable proceedings to be brought in respect of the alleged violation."[279] However, it is also provided that

> "Any violation of the requirements of the present Convention *within the jurisdiction* of any Party to the Convention shall be prohibited and sanctions shall be established therefor under the law of that Party."[280]

The extent of coastal State "jurisdiction" is ambiguous as that term was deliberately left undefined pending agreement at UNCLOS III--a course of action also reflected in the 1972 London Dumping Convention although it was provided that the question would be examined after UNCLOS III had agreed.[281] Two major issues remain to be resolved. First, how far from the baseline does such jurisdiction extend? If it is decided that coastal State jurisdiction to enforce the provisions of the 1973 IMCO Convention should extend only to the territorial sea, it is probable that the distance will be 12 miles.[282] On the other hand, if (as seems more likely) at least some coastal State jurisdiction in respect of vessel-source pollution is included in its

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279. Article 4(1). *Cf.* 1954 IMCO Convention, Article X(2). Also as in the earlier Convention, penalties for violations shall be adequate and equally severe irrespective of where the offence occurred, Article 4(4).

280. Article 4(2), emphasis added. The coastal State may either take proceedings or turn its evidence over to the flag State.

281. See below, p. 212. Resolution 23 of the 1973 IMCO Conference, "Nature and Extent of States' Rights over the Sea," declares that the decision of the 1973 Conference reflects a clear intention to leave the question of the nature and extent of States' rights over the sea to UNCLOS III.

282. RSNT, Committee II, Article 2. The present U.K. territorial sea is 3 miles and that of Norway 4 miles.

Exclusive Economic Zone powers, "within its jurisdiction" could mean 200 nautical miles. This result would give the U.K. and Norway control of pollution from foreign flag vessels in their sectors of the North Sea--a radical departure from the *lex lata*. Provisions of the RSNT relevant to vessel-source pollution are discussed below.[283]

The second unanswered question concerns the nature of coastal State powers within the geographical zone agreed upon at UNCLOS III. It will be observed from the quoted provision that the coastal State "shall" prohibit violations of the Convention.[284] What rights correlative to this duty will the coastal State enjoy? It is clear that the *lex ferenda* must differ substantially from the *lex lata*, for coastal State powers over foreign flag vessels are severely limited at present. Vessels passing through the territorial sea enjoy an ambiguous right of innocent passage[285] and, subject to the relevant doctrine of hot pursuit,[286] are on the high seas subject only to the jurisdiction of the flag State.[287] As in the issue of geographical extent of jurisdiction, it is submitted that the best

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283. See below, p. 196.

284. This obligation could be avoided by turning the evidence over to the flag State for proceedings.

285. Geneva Convention on the Territorial Sea and the Contiguous Zone, Article 14(1). See Fitzmaurice, G., "Some Results of the Geneva Conference on the Law of the Sea: Part I--the Territorial Sea and Contiguous Zone and Related Topics," 8 *International and Comparative Law Quarterly* 73-121 (1959). Innocent passage as formulated in the RSNT is described below at p. 196.

286. High Seas Convention, Article 23.

287. High Seas Convention, Article 6(1). See the discussion of the Canadian Arctic Waters Pollution Prevention Act, above at p. 116.

evidence of the *lex ferenda* relevant to coastal State powers to enforce this Convention will be found in the Articles of the RSNT.

All ships required by the Convention to carry a Certificate are subject to inspection while in ports or off-shore terminals under the jurisdiction of a Party.[288] However,

> "Any such inspection shall be limited to verifying that there is on board a valid certificate, unless there are clear grounds for believing that the condition of the ship or its equipment does not correspond substantially with the particulars of that Certificate."[289]

That the meaning of "clear grounds," a criterion unencumbered by guidelines to application, will be a central issue in any contested inspection is a foregone conclusion. While the international law of "reasonability"[290] and "equality of treatment"[291] would appear to provide some help, it is submitted that without further definition, "clear grounds" is more likely to be determined by power politics than law.

If the "clear grounds" provision represents a concession to shipowning (and socialist) States,[292] the provision obligating the

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288. Article 5(2).

289. *Ibid*.

290. High Seas Convention, Article 2.

291. Both the U.K. and Norway are Parties to the 1923 Geneva Convention and Statute on the International Regime of Maritime Ports which requires equal treatment of national and foreign ships in regard to access to ports. U.N., *Laws and Regulations on the Regime of the Territorial Sea*, U.N. Doc. ST/LEG/SER.B/6 (1956).

292. The Soviet Union is extremely reluctant to permit inspection of its vessels in foreign ports. A Draft International Convention on the Regime of Vessels in Foreign Ports submitted to IMCO by the U.S.S.R. provides that "the local authorities shall not, however, carry out inspection, or search of the master's safe if the master gives formal assurances that the vessel complies

coastal State to "take such steps as will ensure that the ship shall not sail until it can proceed to sea without presenting an unreasonable threat of harm to the marine environment"[293] may represent the other side of the compromise. Although the coastal State *may*

> "grant such a ship permission to leave the port or offshore terminal for the purpose of proceeding to the nearest appropriate repair yard available,"[294]

it is not obliged to do so. While this provision may permit "coast of convenience" States to release vessels if they consider it to be in their short-term economic interests to do so, few coastal States concerned with the preservation of their own territory and adjacent waters would be likely to release a substandard vessel carrying cargo likely to return without the ship.

A coastal State Party which takes action against a ship for violation of the Convention is required to notify the flag State immediately.[295]

Article 5(4) obligates Parties to apply the "requirements of the present Convention" to vessels of States non-Party "to ensure that no more favourable treatment is given to such ships." Although this may appear to conflict with the well-known rule of international customary law that

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> with the provisions of paragraph I of this Article [the duty to comply with the port State's laws] and that there are no objects in the safe which could be used in violation of the said provisions." IMCO Document LEG XXVI/2, Annex, Article 5(2).

293. Article 5(2).

294. *Ibid.*

295. Article 5(3).

> "a treaty does not create either obligations or rights for a third State without its consent,"[296]

it is submitted that no conflict exists. Parties are not obliged to apply "the Convention" to non-Parties, but to apply its "requirements" and then only so far as may be necessary to prevent unequal treatment.[297] It is entirely possible for the coastal State to use powers conferred upon it by other sources of international law to coerce compliance with the Convention. The most obvious example would be that of barring "sub-standard" vessels from her ports. So long as discrimination is based on the Convention, and especially if the Convention is widely accepted, this action would not be inconsistent with international customary law.

The paragraphs of the preceding Article dealt with violations of the Convention's provisions concerning Certificates. Article 5 is, therefore, primarily concerned with construction and equipment standards, although discharge violations might well be detected following the wider inspection permitted under the circumstances discussed above.

Article 6 provides that inspections of a ship subject to the Convention *may* be made in a port or offshore terminal of a Party to monitor compliance with Convention discharge provisions.[298] Inspection

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296. This rule is incorporated in the Vienna Convention on the Law of Treaties, Article 34.

297. This interpretation is consistent with Article 31(1) of the Vienna Convention which provides that "A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose."

298. Article 6(2). The use of the permissive term "may" rather than the mandatory "shall" could prove significant if a port authority were reluctant to prosecute vessels upon which its revenues

procedure is not described nor limited; thus, although it would be likely to commence with a careful perusal of the appropriate Record Book, it could well extend to detective work such as cargo residue assay. Inspection of pollution control equipment and vessel construction is clearly relevant as evidence of a discharge violation--but is it permitted? Article 5 required particular circumstances for inspection beyond the determination that the vessel carried a valid Certificate. It is submitted that any inspection relevant to the enforcement of the Convention will be concerned with *both* aspects of pollution control: defective equipment as evidence of potential pollution and *any* evidence relevant to an unpermitted discharge. If this view is correct, the inspection restrictions imposed by Article 5 are without effect.

An inspecting State which detects or suspects a discharge violation is limited to submitting a report detailing the circumstances to the flag State.[299] The master must be notified if it is "practicable" to do so. Although the plain meaning of the term employed in this context contemplates communications, it may well be used to prevent communicating information to a suspect likely to flee the jurisdiction.[300]

Any Party with relevant evidence must make it available to the

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depend. See, International Law Association: "The Concept of Port State Jurisdiction," a Report to the New Delhi Conference (1974).

299. Article 6(2).

300. Article 6(3). The captain of the *Halcyon the Great*, a tanker of 227,000 tons, upon learning that Canadian authorities were to seize his vessel, simply sailed beyond Canadian jurisdiction, the efforts of a police launch which pursued the tanker being of no avail. *The Scotsman*, 2 November 1974, p. 6.

flag State. As in the 1954 IMCO Convention, the duty of the flag State is limited to prosecuting only if, in its determination, a violation has occurred. The flag State must inform the complaining State and IMCO about what action--if any--has been taken.

A Party may also inspect a ship in its port or offshore terminal upon receiving a request to do so from another Party.[301] Such inspection is limited to detecting evidence of unlawful discharges anywhere and must itself be based on "sufficient evidence." The port State must report any such investigation to both the flag State and the Party requesting it so that appropriate action can be taken. Although more extensive comments are reserved for discussion below, a summary of this provision may add useful perspective.

First, it should be observed that the inspecting State (hereafter, the port State) is not obligated to inspect at the request of another State; it "may" do so. Only reports from States Party to the Convention may be acted upon. Since the discharge may occur "in any place" the *locus* might well have been the territorial sea of the complaining State--or a State non-Party for that matter. (The *locus* of discharges which the port State suspects to have occurred without a report from another State is not specified; however since Article 6 purports to confer limited powers to inspect on the coastal State, it appears to contemplate discharges outside coastal State "jurisdiction"--within which a coastal State may "cause proceedings to be taken in accordance with its law.")[302] Finally, it is evident that

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301. Article 6(5). Article 7 provides for compensation in cases of undue delay to ships under Articles 4, 5 and 6 of the Convention.

302. Article 4(2)(a).

the "appropriate action" pursuant to the Convention is that of flag State investigation and prosecution as is the case in the analogous provision in which the port State initiates an investigation of discharge violation.

d) other provisions

Article 16, containing the so-called "tacit acceptance" procedure, is the most important of the remaining provisions. The essence of this provision is that silence means assent to amendment of the technical aspects of the Convention incorporated in Annexes and Appendices.

An amendment to an Annex shall be deemed to have been accepted at the end of a period to be determined if not objected to by at least one-third of the Parties or by Parties representing at least half of the global merchant GRT, provided that the appropriate IMCO body may decide that such amendment requires acceptance by two-thirds of the Parties owning 50 per cent. of the world's merchant GRT.[303] A similar provision not including the proviso applies to amendment of Annex Appendices. Articles remain subject to an affirmative two-thirds vote of Parties owning at least 50 per cent. of the world's merchant GRT.[304]

The significance of the tacit amendment procedure is that it permits the rapid amendment of provisions subject to technical obsolescence without the ratification requirement which may require national legislation by each Party. The need for a provision of

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303. Article 16(2)(f)(ii). The MEPC has been designated the "appropriate body."

304. Article 16(2)(f)(i).

this sort has been graphically demonstrated by the 1960 Safety of Life at Sea (SOLAS) Convention which, though the subject of many proposed amendments, was never amended. The 1974 SOLAS Convention has incorporated a tacit amendment procedure in an attempt to facilitate amendment acceptance.[305]

Article 10 provides that disputes relating to the Convention shall, if settlement by negotiation is not "possible," be submitted at the request of any of them to arbitration as set out in Protocol II. Protocol II provides for a three-person arbitral tribunal. The problems associated with the constitution of such a panel have been reduced somewhat by providing that:

1. One Arbitrator shall be nominated by each Party and the two first named shall nominate the Chairman.[306]

2. If the Chairman has not been nominated following a specified period, the IMCO Secretary-General may nominate him.[307]

3. If one of the Parties has not nominated an Arbitrator at the end of a specified period, the Secretary-General may nominate the Chairman who may then ask the Secretary-General to nominate the third member.[308]

The 1954 IMCO Convention provides for reference to the International Court of Justice unless the Parties agree to submit the dispute to arbitration. While the provisions contained in Protocol II

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305. A similar amendment procedure is employed by the International Civil Aviation Organisation. Annexes to the ICAO Convention become effective within three months unless a majority of Parties register their disapproval. (Article 90(a)).

306. Protocol II, Article III.

307. Protocol II, Article IV(1).

308. Protocol II, Article IV(2), (3).

are certainly welcome additions to the 1973 IMCO Convention, it is regrettable that reference to the I.C.J. was not offered as an alternative means of dispute settlement. This may well indicate the desire of Conference delegates not to prejudice the UNCLOS III negotiations from which may emerge fora especially created for such functions.

e) comments on the 1973 IMCO Convention

The 1973 IMCO Convention has been the subject of considerable comment and criticism. It is proposed in this section to discuss some of these comments and to point out developments related to the Convention. The discussion has been subdivided into the general subjects of "equipment and technology" and "standards and enforcement."

i) equipment and technology

That oil reception facilities are necessary to the effectiveness of the 1973 IMCO Convention is widely recognised. In 1971 the IMCO Assembly in a Resolution which recalled the 1969 Amendments and anticipated the 1973 Convention invited member Governments "to ensure the provision and maintenance of adequate facilities as soon as possible."[309] Following the 1973 Conference, it became apparent that not only were adequate oil reception facilities needed, but facilities to receive chemicals, sewage and garbage must be provided as well if the Convention were to become widely ratified.[310] A further IMCO Assembly Resolution was adopted, urging Governments to ensure the

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309. IMCO Assembly Resolution A.235 (VII).

310. The MEPC has observed that "certain States had reported difficulties in accepting and implementing the 1973 Convention, particularly with regard to the provision of the necessary reception facilities and monitoring equipment for the discharge of oil." MEPC III/WP.7.

provision of reception facilities as soon as possible and, in the case of "special areas," not later than 1 January 1977.[311]

At the second session of the MEPC, the Oil Companies International Marine Forum (hereafter, OCIMF) announced that it was developing guidelines for the installation of the oil reception facilities which are required by Regulation 12 of Annex I.[312] This document, "Draft Guidelines for Assessment of Reception Facility Tankage at Oil Loading Ports" (OCIMF, May 1975), was submitted the following year to the MEPC third session, along with the report of an *ad hoc* Working Group on Reception Facilities.[313] Two conclusions emerging from this work were: 1) the need for oil reception facilities must be carefully studied so that these expensive installations are not overbuilt; and 2) the disposal of oily effluent at offshore loading installations presents particular problems of storage or transportation. Following the MEPC fifth session, the Working Group submitted a set of Draft Guidelines on Means for Ensuring the Provision and Maintenance of Adequate Reception Facilities in Ports - Part I - Oily Wastes.[314] An amended version of this Draft has now been adopted by the MEPC.[315] The Working Group is continuing its investigation; at this writing a questionnaire concerning present facilities in ports

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311. IMCO Assembly Resolution A.348(IX).

312. MEPC III/5. OCIMF is an association of oil companies interested in the marine transportation of petroleum and represents those interests at IMCO.

313. MEPC III/WP.5.

314. MEPC VI/8.

315. MEPC VI/WP.3 and MEPC VI/WP.3/Add.1.

for the reception of oily wastes is outstanding.[316]

The development of adequate monitoring (and on new ships, control) equipment is generally thought to be necessary before the discharge provisions of Annex I can be observed.[317] The OCIMF has stated that not only is there as yet no completely satisfactory monitoring equipment for persistent oils, but

> "the provision of monitors for clean oil tankers definitely requires the development of new technology, perhaps more so than any other single provision within the 1973 Convention."[318]

This problem was recognised at the Conference, and Regulation 15(6) of Annex I provides that where in the view of IMCO such equipment is not obtainable, the flag State may waive compliance, provided an alternative procedure established by IMCO is adopted. Indeed, Resolution 10 of the Conference recommends the promotion of studies to develop "more sensitive, accurate and reliable oil content measuring instruments to cope with the full range of oils covered by that Annex."[319]

An MEPC Working Group has been investigating this problem and submitted a Draft International Performance and Test Specifications for Oily-Water Separating Equipment and Oil Content Metres to the MEPC fifth session.[320] This document has been amended and approved by the

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316. MEPC VI/WP.3/Add.1, Annex I.

317. MEPC III/WP.7.

318. OCIMF, *International Convention for the Prevention of Pollution from Ships, 1973: Position of the Oil Companies International Marine Forum* (October 1974), p. 10.

319. Resolution 6 recommends that studies be undertaken to ascertain environmental problems created by the discharge of light refined oils.

320. MEPC VI/7.

MEPC which has decided to submit a Resolution to the Assembly inviting Governments to adopt and apply the specifications.[321]

A number of issues are raised by the vessel construction requirements of the Convention. Some commentators have observed that restricting the already weakened[322] construction requirements to new, large ships (unlikely to be built in the current tanker glut)[323] means that such requirements are temporarily without effect.[324] The opposite view is based primarily upon economic considerations: vessels which must comply with such requirements as segregated ballast are more costly to build and operate. Few maritime States would enthusiastically accept requirements which would place their fleets at a competitive disadvantage. Moreover, many Third World States simply may not have the economic and technological resources to

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321. International Institute for Environment and Development, "Report on the Fifth and Sixth Sessions of MEPC," (unpublished and undated), para. 5, p. 7.

322. McManus, R., "The New Treaty on Vessel Pollution," *Oceans* (July 1974), pp. 59-65, at p. 64. Mr. McManus cites the rejection of a U.S./U.S.S.R. proposal that double bottoms be used to provide segregated ballast as a retreat from desirable construction requirements.

323. It has been suggested that even when construction of new vessels accelerates, replacement demand for tankers is likely to be for vessels below 70,000 DWT (to avoid the IMCO construction requirements) and above 250-300,000 dwt (the optimal size for the expanding Middle East-U.S. journey). *The Economist*, 12 February 1977, p. 104.

324. It is submitted that since the Convention is not likely to come into force before 1980, the year in which *The Economist* predicts tanker demand is likely to revive, the current excess tanker capacity is without practical effect on the vessel construction requirements of the Convention. It has been suggested by the Executive Director of UNEP that current excess tanker capacity be converted by requiring segregated ballast on existing vessels. The MEPC is currently devoting considerable attention to this possibility. MEPC III/WP.7.

comply with vessel construction requirements and operation procedures.[325]

ii) standards and enforcement

An important problem which must be resolved before Annex II can be satisfactorily implemented concerns the establishment of procedures and arrangements for the discharge of noxious liquid substances into the sea.[326] Many liquid chemicals remain to be classified, a task made more difficult by the practice of identifying them only by trade names.[327] Even after classification, problems remain, including measuring the residue remaining in the cargo tanks, assessing the effect of the ship's wake on chemical concentration, and determining the characteristics of non-soluble substances before and

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325. This problem was a particular concern of the Symposium on Prevention of Marine Pollution from Ships, held in Acapulco, 22-31 March 1976. As much of the Third World merchant marine is composed of used vessels from the developed States, one view is that assistance to the Third World ought to include the conversion of such ships to acceptable standards.

326. Conference Resolution 13, "Procedures and Arrangements for the Discharge of Noxious Liquid Substances into the Sea," recommended studies to develop uniform standards for Annex II and to consider, on the basis of such standards, the form which the Cargo Record Book ought to take. Resolutions 14-16 are also concerned with the implementation of Annex II.

327. MEPC II/WP.7. At its third session the MEPC invited members to investigate the extent to which their Governments could assist in laboratory tests of uncategorized substances to facilitate implementation of Annex II. A new Sub-Committee on Bulk Chemicals has been established with the primary task of elaborating safety and pollution prevention measures related to the handling and carriage of noxious chemical substances in bulk. IMCO, *Annual Report* (1975-1976), para. 52, p. 15. This subject was also extensively discussed at the Acapulco Symposium.

after discharge.[328]

The extent of coastal or port State jurisdiction to enforce the Convention has not been determined because UNCLOS III has not agreed upon a Convention. Until some decision is taken on coastal State or port State jurisdiction to enforce, the discharge prohibitions of the 1973 Convention will depend upon the flag State for their effective observance--something less than a certainty in the case of vessels flying flags of convenience.[329]

5. The 1969 IMCO Intervention Convention[330]

The International Convention relating to Intervention on the High Seas in Cases of Oil Pollution Casualties (hereafter, the 1969 IMCO Intervention Convention), to which both the U.K. and Norway are Parties, came into force 6 May 1975.

The 1969 IMCO Intervention Convention defines under what circumstances Parties may interfere with foreign vessels on the high seas

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328. Horrocks, J., *op. cit.* in footnote 223, at p. 58.

329. "Records for oil tanker losses and the amount of oil spilled into the oceans were set in the first nine months of last year--well before the wreck of the *Argo Merchant* and the current rash of tanker mishaps--according to industry figures. Thirteen tankers were declared a total loss in the first nine months of last year, according to the Tanker Advisory Center, an industry organization based in New York City." *International Herald Tribune*, 13 January 1977, p. 5. The article points out that the wreck of the *Argo Merchant* as well as seven other tanker accidents off the U.S. within one month all involved vessels flying the Liberian flag. Although the Liberian fleet's record is not as bad as some other flag of convenience States, it nevertheless is much worse than that of such States as the U.K. or Norway. Another recent article analysing the question of flag of convenience safety concludes that "(f)lags of convenience are less safe than other flags. But they are more profitable--and they'll multiply." *The Economist*, (12 March 1977), pp. 81-82.

330. Cmnd. 4403 (1970); 9 *International Legal Materials* 25-44 (1970). As of 24 December 1976, 31 States were Parties to the Intervention Convention. IMCO Doc. CSI/Circ. 32.

to protect their territory from damage by oil pollution.[331] The essence of the Agreement is set out in the first Article which provides,

> "Parties to the present Convention may take such measures on the high seas as may be necessary to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution of the sea by oil, following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences."

Analysis of this Article will in large part summarise the Convention.

a) place of intervention

The Convention confers a right to act only on the high seas;[332] however since the *locus* of the casualty is not specified, the spill itself could come from an area of ocean under a greater or lesser degree of national jurisdiction, for example the Exclusive Economic Zone or territorial sea.[333] This may result in an interesting situation, depending upon the outcome of UNCLOS III as well as other developments in the law of the sea. When the Convention was drafted the primary concern was to agree on coastal State rights to deal with oil pollution from vessels outside the territorial sea--a distance of 3 and 4 miles from the U.K. and Norway respectively. However, the likely emergence of the 12-mile territorial sea and the 200-mile EEZ has made the right to intervene on the high seas less important.

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331. The MEPC is considering a manual on intervention guidelines. MEPC III/WP.7.

332. Article VII.

333. Professor Brown has considered various combinations of casualty and damage *locus* in his analysis of the Convention. *Op. cit.* in footnote 3, at p. 147.

This is especially true in the case of straits, areas of particular danger to shipping. The right to intervene on the high seas could become irrelevant in over 100 straits (including the Straits of Dover) if a universal 12-mile territorial sea were adopted. Should coastal States be given powers to prevent pollution in their EEZ's the importance of this Convention in the entire North Sea would be greatly lessened. In fact, the writer suggests that whatever powers UNCLOS III gives the coastal State they are unlikely to be more restricted than this Convention. Thus, the wide acceptance of a UNCLOS III Agreement could, in the writer's view, diminish the importance of the 1969 IMCO Intervention Convention.

b) permissible intervention

The coastal State may act only "to prevent, mitigate or eliminate grave and imminent danger". The nature and extent of coastal State action will necessarily vary according to circumstance, but it is limited both by a Conventional and customary law requirement that it be proportional to the damage sought to be prevented.[334] Additional safeguards are provided by Articles requiring compensation for measures taken in contravention of the Convention[335] and providing for dispute settlement.[336]

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334. Article V(1). The specified calculus of proportionality requires that account be taken of the extent and probability of damage if the measures are not taken, the likelihood that the measures will be effective and the extent of damage which may result from such measures. Article V(3). See also *The I'm Alone*, 2 U.S. Department of State Arbitration Series 1-7 (1931-1935).

335. Article VI.

336. Article VII; Annex, Chapter I, "Conciliation," Chapter II, "Arbitration."

c) interests protected

The protection afforded by the Convention to States Parties includes their coastlines and "related interests." Examples of such interests are contained in Article II(4), which provides:

> "4. 'related interests' means the interests of a coastal State directly affected or threatened by the maritime casualty, *such as*
>
> (a) maritime coastal, port or estuarine activities, constituting an essential means of livelihood of the persons concerned;
>
> (b) tourist attractions of the area concerned;
>
> (c) the health of the coastal population and the well-being of the area concerned, including conservation of living marine resources and of wildlife."[337]

This Article was quoted because its interpretation would, in large part, determine the answer to the question of to what extent the Convention authorises coastal State interference to protect its interest in the development of petroleum from the continental shelf.

The plain meaning of this provision suggests that a new item (d), "the development of the resources of the continental shelf" could be included and may well be implicit. Article II(4) is concerned with coastal State interests vulnerable to oil pollution; no geographical restriction (for example, "within its territorial sea") qualifies its scope. Indeed, one analysis of the Conference *travaux préparatoires* indicates that the question of geographical limitation was only considered in relation to fisheries interests.[338]

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337. Emphasis added.

338. Brown, E.D., *op. cit.* in footnote 3, at p. 150.

The possibility of a collision between a ship or a mobile drilling platform which is drifting or is out of control and an offshore installation of any type is a source of great concern to both U.K. and Norwegian authorities.[339] The legal right of the coastal State to intervene in such a situation may be clarified when a Convention on Wreck Removal and Related Issues, currently being developed by the IMCO Legal Committee, assumes its final form and is accepted.[340] In the interim the limits to coastal State discretion to act in the hypothetical situation are defined by this Convention and international customary law. Application of the convention is determined by two additional definitions which help to describe its scope.

d) oil

The 1969 IMCO Intervention Convention applies only to actions to prevent oil pollution (although the 1973 Protocol, discussed below, is intended to apply to actions in regard to other pollutants). "Oil" means crude, fuel, diesel and lubricating oil.[341] It is clear, therefore, that an action to prevent a collision which would not result in oil pollution (for example, a steel jacket drifting towards a gas rig) is not covered by the Convention. The more probable case, however, would be that which might result in at least some oil pollution (for example, a supply ship drifting towards a drilling rig on station). Threatened oil pollution must "reasonably be expected to

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339. See above, p. 43.

340. IMCO, *Annual Report* (1975-1976), para. 69, p. 18.

341. Article II(3).

result in major harmful consequences." If this criterion cannot be satisfied and intervention is for the purpose of preventing collision damage (which may incidentally also result in a small discharge of oil), it follows that such action could not be supported by reference to the Convention. Action would therefore have to be based on international customary law.[342]

e) following a maritime casualty

Action under the Convention is only authorised "following upon a maritime casualty or acts related to such a casualty." A "maritime casualty" means

> "a collision of ships, stranding or other incident of navigation, or other occurrence on board a ship or external to it resulting in material damage or imminent threat of material damage to a ship or cargo."[343]

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342. Writers differ on the question of whether the Intervention Convention codifies customary law and is therefore applicable to all States, or whether it creates rules applicable *inter partes*. The former view numbers among its proponents Beesley, J., "Rights and Responsibilities of Arctic Coastal States: The Canadian View," 3 *Journal of Maritime Law*, 1-12 (1972); Cundick, R., "High Seas Intervention: Parameters of Unilateral Action," 10 *San Diego Law Review* 514-558 (1973); and Sweeny, J., "Environmental Protection by Coastal States: The Paradigm from Marine Transport of Petroleum," 4 *Georgia Journal of International and Comparative Law* 278-306 (1974). Writers of the view that intervention may only occur *inter partes* include Churchill, R., "U.K.," in Churchill, R. (*et al.*) (eds.), *New Directions in the Law of the Sea*, Vol. III, British Institute of International and Comparative Law, London (1973), pp. 281-301; and Lucchini, L., "La pollution des mers par les hydrocarbures: les Conventions de Bruxelles de novembre 1969 ou les fissures du droit international classique," *Journal du Droit International* (1970), at p. 809 (cited by De Semet, A., "Policing on the High Seas: With Special Reference to the North Sea," in Churchill, R. *op. cit.* in this footnote, at pp. 193-205. Professor Brown suggests that under certain conditions customary law might justify intervention (*op. cit.* in footnote 3, at pp. 144-145), as does Professor Swan (Swan, P., "International and National Approaches to Oil Pollution Responsibility: An Emerging Regime for a Global Problem," 50 *Oregon Law Review* 506-586 (1971)).

343. Article II(1).

A "ship" includes any "sea-going vessel"[344] or "floating craft"[345] but does not include

> "an installation or device engaged in the exploration and exploitation of the resources of the sea-bed and the ocean floor and the subsoil thereof."[346]

Two observations are relevant to this discussion. First, it will be noted that action may only be taken *ex post facto*, a requirement criticised by many writers and a factor in the Canadian Government's refusal to assent to the Convention.[347]

The second problem is, in the writer's view, more likely to occur on an examination paper than in practice in the North Sea. As drill ships are subject to the Convention only when they are not "engaged in the exploration and exploitation of the resources of the sea-bed," a variety of line-drawing problems could present themselves. For example, is a drilling ship being blown off station toward an adjacent mobile platform "engaged" in drilling? Is it more like an "installation" than a "ship?" In the context of the U.K. and Norwegian sectors of the North Sea the problem posed is likely to involve those two States and to be resolved by close coordination between the two Governments as well as the offshore operators. Furthermore, it is submitted that, as in the case of intervention to prevent collision damage, *bona fide* interference with other users of

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344. Article II(2)(a).

345. Article II(2)(b).

346. *Ibid.*

347. Gold, E., "Marine Pollution and International Law," 3 *Journal of Maritime Law* 13-33 (1972), p. 27; Hardy, M., *op. cit.* in footnote 1, at p. 328.

the sea is not inconsistent with international customary law.[348]

6. The 1973 Protocol[349]

Delegates to the Brussels Conference which resulted in the Intervention Convention recognised the importance of agreement on similar provisions involving non-oil pollutants. Accordingly, a Resolution was appended to the Intervention Convention recommending that IMCO should intensify its work on all aspects of pollution by non-oil agents, and that in the event of a threat of such pollution, States "co-operate as appropriate in applying wholly or partially the provisions of the Convention." IMCO's work culminated in the Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution by Substances Other than Oil, 1973 (hereafter, the 1973 Protocol), which was adopted at the 1973 IMCO Conference. It is not yet in force.

The Protocol follows the 1969 Intervention Convention very closely, the major difference being the substitution of "substances other than oil" for "oil":

> "Parties to the present Protocol may take such measures on the high seas as may be necessary

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348. Professor Cheng's test of the necessity of self-preservation cited by Professor Brown is relevant here: "The law of necessity is a means of preserving social values .... it is the great disparity in the importance of the interests actually in conflict that alone justifies a reversal of the legal protection normally accorded to these interests, so that a socially important interest shall not perish for the sake of respect for an objectively minor right." As "the necessity of self-preservation merely excuses what would otherwise be an unlawful act," it is necessary to weigh the conflicting interests in every case. Brown, E.D., *op. cit.* in footnote 3, at pp. 143, 145, citing Cheng, B., *General Principles of Law as Applied by International Courts and Tribunals*, Stevens and Sons, London (1953), p. 74.

349. Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, 1973, H.M.S.O. (1974); 13 *International Legal Materials* 605-610 (1974).

> to prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests from pollution or threat of pollution by substances other than oil following upon a maritime casualty or acts related to such a casualty, which may reasonably be expected to result in major harmful consequences."[350]

Substances other than oil include both those which are enumerated in a list prepared by GESAMP and others

> "which are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."[351]

Although the intervening Party is the judge of whether unlisted substances are "liable to create hazards" etc., he is charged with proving that such intervention was necessary because the substances would reasonably pose a danger analogous to that of any of the substances listed by GESAMP.[352]

7. UNCLOS III: RSNT Articles relevant to control of pollution from vessels

a) RSNT Articles concerned with the territorial sea

The RSNT provides that States may establish a territorial sea of up to 12 nautical miles from the baseline.[353] This extension from the present U.K. 3-mile and Norwegian 4-mile limit would give the two States increased control over vessel-source pollution because, subject to the right of innocent passage, they would exercise sovereignty over the area. An attempt has been made to further define the concept

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350. Article I(1).

351. Article I(2).

352. Article I(3).

353. Committee II, Article 2.

of innocent passage and to define coastal State jurisdiction over foreign vessels in its territorial sea.

The present Geneva Convention on the Territorial Sea, 1958, provides that "passage is innocent so long as it is not prejudicial to the peace, good order or security of the coastal State," but provides no further guidance.[354] The RSNT rectifies this omission by listing a number of acts which would be considered *ipso facto* prejudicial to the coastal State, including

> "Any act of wilful and serious pollution, contrary to the present Convention."[355]

The RSNT provision would apparently permit pollution caused accidentally (even by gross negligence) during innocent passage, and it would impose a very heavy burden of proof upon the coastal State to show that pollution was wilful.[356] Nevertheless, it does provide that wilful disregard of whatever standards are ultimately agreed upon subjects a vessel to coastal State jurisdiction.

The present Committee II text provides that the coastal State may make laws relating to innocent passage through its territorial sea in relation to, *inter alia*, navigation safety,[357] the protection

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354. Geneva Convention on the Territorial Sea and Contiguous Zone, Article 14(4).

355. Committee II, Article 18(2)(b).

356. Birnie, P., "Prevention of Pollution from Ships: Problems and Progress," a paper read at a seminar at the University of Wales Institute of Science and Technology, 17 November 1975, at p. 17; Lowe, V., "UNCLOS III: The Informal Single Negotiating Text," a paper prepared for the Labour Party (1975), at p. 9; Lowe, V., "The Enforcement of Marine Pollution Regulations," 12 *San Diego Law Review* 624-643 (1975).

357. Committee II, Article 20(1)(a).

of installations,[358] the protection of cables and pipelines,[359] the conservation of living resources,[360] and the preservation of the environment of the coastal State and the prevention of pollution thereof.[361] Such laws would have to be "in conformity" with the proposed Convention, and

> "shall not apply to or affect the design, construction, manning or equipment of foreign ships or matters regulated by generally accepted international rules unless specifically authorised by such rules."[362]

It is evident that the standards ultimately incorporated in a UNCLOS III Convention will be of the greatest importance in determining the nature and scope of future U.K. and Norwegian legislation. (Committee III efforts to formulate pollution standards are discussed below.)

The coastal State is expressly empowered to establish traffic separation schemes in its territorial sea, in particular, for ships carrying dangerous cargoes, including tankers. The importance of this provision to the North Sea is that it would, in the context of a newly-authorised 12-mile territorial sea, permit the application of U.K. vessel traffic control regulations to all ships passing through the British side of the Straits of Dover.

b) RSNT Articles concerned with the high seas

The term "high seas" in the RSNT does not include the EEZ.[363]

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358. Committee II, Article 20(1)(b).

359. Committee II, Article 20(1)(c).

360. Committee II, Article 20(1)(d).

361. Committee II, Article 20(1)(f).

362. Committee II, Article 20(2). As mentioned above, the ambiguity of "generally accepted" is conducive to auto-interpretation.

363. Committee II, Article 75.

If this extremely controversial proposal is accepted, the North Sea beyond the 12-mile limits proposed for littoral States would no longer be high seas, but would be rather a zone *sui generis*. This is important to vessel-source pollution control because ships on the high seas remain subject to the exclusive jurisdiction of the flag State.[364] An extensive provision detailing flag State duties reflects an attempt to induce such States to exercise their jurisdiction effectively.[365] The proposal would require every State to take such measures for its vessels as "are necessary" to ensure safety at sea, including those set out in the Article relating to vessel construction, manning and operation. Of particular interest is a proposed paragraph which would require a State whose vessel had been involved in a marine casualty causing personal injury or damage to shipping or installations of another State to hold an inquiry.[366] The proposal stipulates that such inquiry be before (or by) "a suitably qualified person," although there is no requirement that it occur promptly or that findings be made available to interested bodies (for example, IMCO).

Yet another RSNT proposed Article provides for a right of hot pursuit in respect of violations which occurred in the EEZ or on the continental shelf--including safety zones.[367] This inclusion provides a welcome clarification of a potentially serious problem.[368]

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364. Committee II, Article 80(1).

365. Committee II, Article 82.

366. Committee II, Article 82(7).

367. Committee II, Article 99(2).

368. See the discussion of hot pursuit in the Section on U.K. law, below at p. 290.

c) RSNT Articles concerned with standards

States are required to act through "the competent international organisation"[369] or diplomatic conference to set standards for vessel-source pollution.[370] These international standards must be complemented by national regulations enacted by flag States which are "no less effective."[371] Coastal States are authorised to establish standards in their territorial sea "in the exercise of their sovereignty," subject only to the preservation of the right of innocent passage.[372] The wide discretion of the coastal State to promulgate unilateral standards is emphasised by the deletion of a provision from this Article as it appeared in the ISNT, which required that "consistent with the aim of achieving maximum possible uniformity of rules and standards governing international navigation," the coastal State laws "conform to the international rules and standards."[373]

The coastal State may establish laws to enforce international standards in their EEZ's. However, where

1. International standards are inadequate[374] to meet "special circumstances," and
2. The coastal State reasonably believes that a

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369. This is likely to be either IMCO or UNEP.

370. Committee III, Article 21(1).

371. Committee III, Article 21(2).

372. Committee III, Article 21(3).

373. ISNT, Committee III, Article 21(3).

374. No other State or Organisation is authorised to determine standards in the area.

> specific part of its EEZ should be designated a special area pursuant to enumerated criteria,[375]

the coastal State may establish national laws

> "implementing such rules and standards or navigational practices as have been made applicable by the competent international organisation for special areas."[376]

As ambiguous as this provision is, it is considerably more precise than the corresponding provisions (there were two) of the ISNT.[377] Although a number of questions should be answered before this provision is included in a Convention (for example, the limits to coastal State discretion imposed by "the competent international organisation"), one thing is clear: there will be *some* form of the "special area" provision in any likely version of a Convention. Whether or not it is tied in with the EEZ, it is likely to extend 100 miles from the coastal State. Canada, an advocate of the special zone concept at UNCLOS III, could then incorporate its Arctic Waters Pollution Prevention Act conveniently into the new area of coastal State jurisdiction. This is of particular importance to the North Sea, for although it is not known at present what characteristics might constitute "special circumstances," there are certainly "recognised technical reasons" for distinguishing the North Sea from the remainder of the Atlantic--as is clearly evidenced by the 1954 IMCO Convention Annex which designates

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375. The area must be one where "for recognized technical reasons in relation to its oceanographical and ecological conditions, as well as its utilization or the protection of its resources, and the particular character of its traffic, the adoption of special mandatory methods for the prevention of pollution from vessels is required." Committee III, Article 21(5).

376. *Ibid.*

377. ISNT, Committee III, Article 20(4), (5).

that semi-enclosed body of water a "prohibited area." A petition to "the competent international organisation" by the littoral States of the North Sea (that is, those "most interested") would be a powerful application for the most complete protection possible available from international standards.

d) RSNT Articles concerned with enforcement

These Articles include provisions for limited "port State" jurisdiction and enforcement to complement that of the flag State.[378] Briefly, port State jurisdiction contemplates coastal State investigation and, where permitted, prosecution of foreign flag vessels present in its ports for violations of internationally-agreed discharge standards, regardless of the *locus* of the offence.[379] If the alleged discharge occurred in the national waters or EEZ of another State, the port State may[380] institute proceedings only if:

1. Requested by the State with jurisdiction over the area in which the discharge allegedly occurred.

2. Requested by the flag State.

3. Requested by the State damaged or threatened.

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378. Port State jurisdiction was proposed at the 1973 IMCO Conference, but was rejected. The International Law Association Report on Port State Jurisdiction suggests that an effective scheme of port State jurisdiction to complement flag State jurisdiction would, in respect of offences committed within its territorial waters, require the port State to investigate and, in specified circumstances, confer a right and possibly a duty on such State to prosecute. *Op. cit.* in footnote 298, at p. 4.

379. Note that proceedings may occur only in respect of discharge (not vessel construction) violations. "Port" also includes off-shore terminals.

380. The discretionary "may" replaces the mandatory "must" of ISNT, Committee III, Article 27. A coastal State which thinks it in its own best interests not to take action is, under the RSNT Article, free to ignore an alleged offence.

4. The violation has or will pollute the port State's internal waters, territorial sea or EEZ.[381]

If a vessel does not meet international seaworthiness standards or threatens damage to the marine environment, the port State may use "administrative" means to prevent it from sailing, except that the port State shall permit the vessel to proceed to the nearest repair yard.[382] The limitation of means to "administrative," a qualification not present in the ISNT, is clearly meant to preclude the use of force to prevent sailing. Although it is recognised that the limitation of force may be even more important than quarantine of unsafe ships in protecting man's environment, the recent example of the supertanker, *Halcyon the Great*, which escaped arrest in Canada by simply sailing beyond Canadian jurisdiction may indicate how this provision will actually work.[383]

Proceedings for violations of *national* pollution control law applicable to the territorial sea or EEZ (and not limited to "discharges"), may be taken only by the State whose laws are alleged to have been violated. This may occur when the vessel is in that State's ports or, subject to conditions, while the vessel is in the territorial sea or EEZ of the coastal State.[384] The effectiveness of port

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381. Committee III, Article 28(2).

382. Committee III, Article 29. *Cf.* the 1973 IMCO Convention, Article 5(2), above at p. 160.

383. See footnote 300 above.

384. A coastal State may inspect a vessel navigating in its territorial sea when there are clear grounds for believing that the vessel has, during its passage, violated national law conforming to international standards or international standards themselves. When the evidence warrants it, proceedings (including arrest of the vessel) may be taken. Committee III, Article

State jurisdiction and enforcement is therefore extremely dependent upon the level of international standards.

D. Pollution from Dumping at Sea

1. Background

In 1969, the U.N. General Assembly asked the Secretary-General, in co-operation with the specialised agencies and intergovernmental organisations concerned, and with a view to the forthcoming U.N. Conference on the Human Environment, to:

1. Review harmful substances in the environment,
2. Review national and international activities dealing with control of marine pollution,
3. Seek the views of Member States on regulation of marine pollution by treaty.[385]

Pursuant to this Resolution IMCO requested GESAMP to prepare a list of substances whose "hazardous characteristics must be assessed taking into account, not only human toxicity but also aquatic toxicity and their effects on amenities."[386] The resulting document classified over 300 substances into those requiring special measures to prevent

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30(2). Coastal State actions in respect of pollution by foreign vessels in its EEZ are more restricted. The coastal State may inspect a foreign vessel navigating in its EEZ only when the factors necessary for territorial sea inspection are present, and in addition, 1) the violation must have "resulted in substantial discharge and significant pollution of the marine environment" and 2) the suspected vessel must have either refused to give information or have supplied information "manifestly at variance with the evident factual situation," or the circumstances of the case must justify inspection. Committee III, Article 30(5). Proceedings can only be taken if there has been "a flagrant or gross violation" of relevant law in the EEZ which has caused or threatens to cause damage to the coastal State, its territorial sea or its EEZ. Committee III, Article 30(6).

385. U.N. General Assembly Resolution 2566 (XXIV), 13 December 1969, adopted unanimously.

386. C XXVI/18Add.1.

escape into the marine environment, and others which would require special precautions only in certain circumstances.[387]

Work was also begun on legal machinery which would afford the environmental protection indicated by the GESAMP report. The United States submitted a draft convention to the U.N. Inter-Governmental Working Group on Marine Pollution in 1971[388] and later that year the instrument was refined at Ottawa.

In Norway, work had started on a regional convention. The Norwegian Government submitted a draft convention to a group of North-West Atlantic States in 1971.[389] Some months later, in October 1971, a Conference was convened in Oslo, at which a five-nation Draft Convention was introduced.[390] This document became the Oslo Convention.

Work continued on a global ocean dumping convention and although the goal of producing such an instrument in time for signature at the June, 1972 UNCHE was not realised, it was postponed only until November of that year when the Convention on the Dumping of Wastes at Sea was signed at London. The Oslo and London Dumping Conventions will be considered in the order in which they were signed.

2. The Oslo Dumping Convention[391]

The Convention for the Prevention of Marine Pollution by Dumping

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387. GESAMP III/19, Annex V.

388. The U.S. Draft is published in 10 *International Legal Materials* 1021-1028 (1971).

389. Letter from Mr. Jan Wessel Hegg, First Secretary, Norwegian Embassy, London, to the writer, 11 February 1975.

390. *Ibid.*

391. Cmnd. 4984 (1972); 11 *International Legal Materials* 262-266 (1972).

from Ships and Aircraft (hereafter, the Oslo Convention) was opened for signature in that Norwegian city on 15 February 1972 and came into force 7 April 1974. This regional Convention was signed by 12 States and has been ratified by nine Governments, including those of the U.K. and Norway.[392] The Convention is limited geographically to an area of the Atlantic and Arctic Oceans which includes the North Sea.[393] The probability that Parties might simply transfer their disposal of harmful substances to areas beyond the Convention zone is sought to be reduced by the inclusion of a requirement that Parties apply the Convention in such a manner as to avoid that result.[394] In the U.K. and Norway, authorities do not think that ocean dumping for which they are responsible is now occurring outside the zone, although reluctance to issue permits has meant that more wastes have had to be disposed of on land.[395]

The Oslo Convention uses a system of permits to regulate the dumping of substances which have been classified according to danger. Annex I classifies substances for which no dumping permit may be issued, unless they "occur as trace contaminants in waste to which they have not been added for the purpose of being dumped." This list includes organohalogen and organosilicon compounds, suspected carcinogens, heavy

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392. Other signatories include the Federal Republic of Germany, Belgium, Denmark, Spain, Finland, France, Iceland, Netherlands, Portugal and Sweden. Ireland has also ratified the Convention. *Cf.* the Paris Convention, above, at p. 134.

393. Article 2.

394. Article 3.

395. Conversations with Mr. D. Stott, Principal and Mr. A. Templeman, Senior Executive Officer, Department of Agriculture and Fisheries for Scotland, 25 April 1975; conversation with Dr. Ø. Schreiner, Norwegian State Pollution Control Authority, 17 November 1976.

metals and plastics.

Annex II enumerates substances and materials which require a permit; it also contains criteria for disposal. Three major groups of substances are contained in Annex II:

1. Toxic materials (for example, arsenic).

2. Waste such as scrap metal and "tar-like substances .... which may present a serious obstacle to fishing or navigation."[396]

3. Non-toxic substances potentially dangerous due to quantities dumped or because of their reduction of amenities.

A Commission of representatives from each Contracting Party determines what quantities of the Annex II inventory shall be defined as "significant" and thus subject to permit.

Dumping of substances and materials not listed in Annex II is allowed, but it still requires "approval of the appropriate national authority or authorities."[397]

Issuance of permits or approvals for dumping must conform to Annex III requirements. This Annex is in essence a checklist of factors to consider when drafting a permit or approval. Its three subdivisions concern:

1. Characteristic of the waste (for example, amount, type).

2. Characteristic of the dumping site and method of deposit (for example, geography, packing).

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396. See the discussion above concerning the possible use of this provision to control the dumping of oil-related debris from offshore petroleum development, at p. 128.

397. The appropriate authorities are the Department of Agriculture, Fisheries and Food (for England and Wales); the Department of Agriculture and Fisheries for Scotland; and the Norwegian State Pollution Control Authority.

3. General considerations and conditions (interference with other users, alternative means of disposal).

Two exceptions to the permit system are based on safety considerations. First, it does not apply to *force majeure* caused by weather, nor to other causes which endanger human lives or the safety of ships or aircraft.[398] Second, if a Party "in an emergency" decides that an Annex I substance cannot be disposed of on land without "unacceptable danger or damage," it must consult the Commission. That body must recommend action, but the Party is only under a duty to "inform the Commission of the steps adopted in pursuance of its recommendation."[399] These exceptions are certainly open to abuse, yet they are not major deficiencies: it is unlikely that a fraudulent explanation would be used by one violating the Convention because detection is so difficult that as a rule he need provide none at all.

A potentially far more limiting provision of the Oslo Convention is the exclusion of "incidental" discharges from the definition of dumping. This was discussed above in connection with seabed operations, and it was also mentioned that disposal of garbage, plastic cups, etc. was not regulated by the Oslo Convention.[400] The latter point is perhaps worth emphasizing here: it was intended that the 1973 IMCO Convention regulate sewage and garbage discharges, yet because these provisions are part of an instrument with controversial provisions in relation to oil and liquid chemicals, the North Sea is unlikely to be

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398. Article 8(1).

399. Article 9.

400. See above, p. 128.

protected from this form of pollution for several years.[401]

Enforcement is by each Party for ships and aircraft subject to its jurisdiction. This includes its own ships and aircraft wherever they may be, all ships and aircraft loading for dumping in its territory, and all ships and aircraft believed to be dumping in its territorial sea. The Parties agree to work toward "co-operative procedures" for enforcing the Convention on the high seas. Until such procedures are developed only the flag State may enforce observance of the Convention on the high seas and the Convention has conferred no additional jurisdiction to enforce upon its Parties.

3. The London Dumping Convention[402]

The Convention on the Dumping of Wastes at Sea (hereafter, the London Dumping Convention) was concluded on 13 November 1972 at an inter-governmental conference held in London and came into force 27 September 1975. Both the U.K. and Norway are Parties.

The London Convention is essentially a global version of the Oslo Convention discussed above. The mechanism of control--substance classification and permit issuance by national authorities--is similar. There are, however, a few important differences in scope and procedure.

"Dumping" means

> "any deliberate disposal at sea of wastes of other matter *from* vessels, aircraft, platforms or other man-made structures at sea,"[403]

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401. It will also be recalled that Annexes 4 and 5 regulating sewage and garbage discharges are optional.

402. Cmnd. 5169 (1972); 11 *International Legal Materials* 1291-1314 (1972).

403. Article III(1)(a)(i), emphasis added.

and includes the disposal *of* vessels, etc. as well.[404] The latter provision appears likely to have been included *ex abundanti cautela* to ensure that ocean dumping which involves scuttling a vessel along with its cargo is expressly subject to regulation.[405] In contrast, the Oslo Convention regulates dumping "by or from" ships and aircraft.[406]

"Dumping" does not include incidental and unintended disposal,[407] nor that related to "the exploration and exploitation and associated offshore processing of sea-bed mineral resources."[408] As mentioned above,[409] this express exclusion effectively precludes an interpretation by the London Commission analogous to that of the Oslo Commission by which "incidental" discharges from fixed or floating platforms might be regulated.[410]

Dumping is prohibited without a permit issued by the national

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404. Article III(1)(a)(ii), emphasis added.

405. A vessel and its cargo of nerve gas were scuttled by the U.S. in "Operation Chase," described by Professor E.D. Brown in "International Law and Marine Pollution: Radioactive Waste and other Hazardous Substances," 11 *Natural Resources Journal* 221-255 (1971), at p. 249 *et seq*. The scuttling of vessels to form reefs for breakwaters or to attract and protect fish would not be "dumping" because the activity would qualify as "placement of matter for a purpose other than the mere disposal thereof" under Article III(1)(b)(ii), an exception to the definition of "dumping."

406. Oslo Convention, Article 19(1).

407. Article III(1)(b)(i).

408. Article III(1)(b)(ii).

409. See p. 130.

410. This was in deference to UNCLOS III. Timagenis, G., "International Control of Dumping at Sea," *Anglo-American Law Review* (1973), pp. 157-187, at p. 178.

authority of the State in which the material is loaded or the flag State if the loading State is not a Party.[411] Whether a permit may be issued and the form it shall take depend upon the nature of the matter to be dumped.

Annexes I and II are lists of toxic substances similar to those appended to the Oslo Convention. Annex I contains extremely dangerous materials (such as organohalogen and specified heavy metal compounds) for which no permit to dump may normally be issued.[412] Annex II compiles less hazardous materials (such as some pesticides) "requiring special care." If present in "significant amounts" in wastes to be dumped, such disposal can occur only after issuance of a "prior special permit."[413] Unlike the Oslo Convention, there is no body designated to determine what may constitute a significant amount.[414] A Party's treaty obligation to issue any permit "only after careful consideration of all the factors set forth in Annex III" is the sole check on auto interpretation of "significant amounts" by the national authority. Annex III contains "provisions to be considered in establishing criteria governing the issue of permits" which are those set out in the Oslo Convention.[415] The dumping of matter not included in

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411. Articles IV(1), VI(2).

412. Article IV(1)(a).

413. Article IV(1)(b); Timagenis, G., *op. cit.* in footnote 410, at pp. 179-180.

414. *Cf.* Oslo Convention, Article 6.

415. Several points are listed under each of three headings: Characteristics and Composition of the Matter, Characteristics of Dumping Site and Method of Deposit, General Considerations and Conditions.

Annexes I or II still requires a "prior general permit" which must be issued according to Annex III criteria.

Exceptions to the regulation of ocean dumping are provided for safety reasons[416] and in emergencies "posing unacceptable risk relating to human health and admitting no other feasible solution" for which a special permit may be issued.[417] Prior to issuance, the Party must consult other countries[418] likely to be affected and the Organisation (discussed below). The Organisation must "promptly" "recommend" appropriate procedures to the issuing State which shall endeavour to follow them to the "extent feasible."

States Parties are responsible for applying the Convention to their own vessels and aircraft, those of other States which are in their territory or territorial sea and loading matter which is to be dumped, and for

> "vessels and aircraft and fixed or floating platforms *under its jurisdiction* believed to be engaged in dumping."[419]

A Party must also "take in its territory appropriate measures to prevent and punish conduct in contravention of the provisions of this Convention."[420]

The obligation to apply the provisions of the Convention to vessels, etc. "under its jurisdiction" differs from the Oslo require-

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416. Article V(1).

417. Article V(2).

418. As Article V(2) provides that consultation shall occur with "any other country or countries that are likely to be affected," it is clear that even non-Parties must be consulted.

419. Article VII(1), emphasis added.

420. Article VII(2).

ment only in that the latter refers to the territorial sea,[421] and evidences the more sensitive political consideration in the global forum that the deliberations at UNCLOS III not be prejudiced. As UNCLOS III has not yet concluded a Convention defining coastal State jurisdiction in respect of dumping, it is only possible to conclude that the extent of such jurisdiction is not specified by the Convention.[422]

On the high seas, beyond the undefined area of national jurisdiction, there is a duty to co-operate with other Parties in developing procedures to apply the Convention, "including procedures for the reporting of vessels and aircraft observed dumping in contravention of the Convention."[423] There is no express provision for reciprocal enforcement on the high seas. The cautious phrasing of "duty to co-operate in developing procedures" even falls short of the Oslo Convention provision whereby each Party "undertakes to issue instructions" to its inspection services to report observations of actual or suspected violations of that Convention.[424] The London Convention, like its regional predecessor, does not confer additional bases of jurisdiction upon Parties; it only obligates its member States to implement the Convention's provisions in respect of vessels, etc. already subject

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421. Oslo Convention, Article 15(1)(c).

422. Timagenis, G., *op. cit.* in footnote 410, at p. 183. Article XIII provides that the Parties agree to discuss the question of coastal and flag State jurisdiction no later than 1976. Although the Parties have met, as yet no decisions which clarify this issue have yet been taken.

423. Article VII(3).

424. Oslo Convention, Article 15(2).

to its jurisdiction.[425]

IMCO has been designated as the secretariat Organisation responsible for Convention implementation.[426] The first consultative meeting among the Parties was held in London 20-24 September 1976, and it is planned to meet during the same month in 1977.[427]

4. UNCLOS III: RSNT Articles Relevant to Control of Pollution from Dumping at Sea

The question of coastal State geographical jurisdiction to apply and enforce its law which the London Dumping Convention left to UNCLOS III has been tentatively resolved by the RSNT. Article 20(5) provides that:

> "Dumping of wastes and other matter, within the territorial sea and the economic zone or onto the continental shelf shall not be carried out without the express prior approval of the coastal State, which has the right to permit, regulate and control such dumping after due consultation with other States which by reason of their geographical situation may be adversely affected thereby."

Jurisdiction would therefore extend to the more distant of 200 miles or the edge of the continental margin, even if it is beyond the EEZ. This provision is complemented by Article 26(1)(a) relating to enforcement which provides for coastal State jurisdiction in that respect "within its territorial sea or its economic zone or onto its continental

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425. Nor does the Convention establish State liability for damage caused by dumping, expressly providing that Parties undertake to develop procedures for liability assessment, as well as for dispute settlement. Article X.

426. IMCO, *Annual Report* (1975-1976). Article XIV(1) provides that the Parties shall meet to discuss organisational matters not later than three months after the Convention comes into force, and Article XIV(2) provides that the Parties shall designate a competent existing Organisation to act as Secretariat.

427. Sierra Club, "International Report," (12 November 1976).

shelf."[428]

The RSNT clearly gives the U.K. and Norway authority to control dumping in their sectors of the North Sea. Although an UNCLOS III Convention incorporating these provisions could not bind non-consenting States,[429] even if those States most likely to dump in the North Sea--the littoral States--were not bound, they would be likely to observe them in practice, both because of public opinion and self-interest. Such behaviour could well lead to the development of a regional customary law.[430]

Two other provisions of the RSNT are noteworthy. First, although States are required to establish national laws to control dumping, they need only "endeavour" to establish international standards.[431] If the required endeavours fail, the result could be a patchwork of national standards governing dumping in an area which may extend beyond 200 miles to the continental margin. Secondly, Article 20(5) confers a "right" on the coastal State to regulate dumping--but it does not *obligate* States to regulate such activities. From an environmental protection point of view, this is most regrettable. Whether permitted by a coastal State of "convenience" or "lethargy," ocean dumping has the potential to injure the entire global community. Man is diminished by the loss of a "piece of the main" in the same manner as is the case

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428. The existing Oslo and London Convention obligations to control dumping from vessels and aircraft registered in the State or flying its flag are retained, as are the loading for dumping provisions. Committee III, Article 26(1)(b), (c).

429. Vienna Convention on the Law of Treaties, Article 34.

430. *Cf.* the *Asylum Case, I.C.J. Reports* (1950), p. 266.

431. Committee III, Article 20(1), (4).

when the damage spreads to "real property."

E. Conventions Promoting Inter-State Co-Operation

1. The Bonn Agreement[432]

The Agreement for Co-operation in dealing with Pollution of the North Sea by Oil (hereafter, the Bonn Agreement) was signed in the West German capital on 9 June 1969, and entered into force two months later. The Agreement is a regional scheme of co-operation among North Sea States and is intended to facilitate remedial action when oil pollution "presents a grave and imminent danger to the coast or related interests of one or more Contracting Parties."[433]

Co-operation depends upon communication; accordingly the Agreement is essentially a formal vehicle to facilitate the flow of information relevant to oil pollution control. Each Party must inform the others of its national organisation responsible for dealing with oil pollution, including authorities in the communications channel.[434] Information relevant to the development of oil pollution control must also be shared.[435]

Parties must "request" masters and pilots of their ships and aircraft to report casualties causing or likely to cause marine oil

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432. Cmnd. 4205 (1969), 9 *International Legal Materials* 359-364 (1970).

433. The Bonn Agreement is more geographically restricted than the Oslo or Paris Conventions, applying only to North Sea States: Belgium, Denmark, France, Federal Republic of Germany, Netherlands, Norway, Sweden and the U.K. The Agreement was prompted by an extraordinary meeting of the IMCO Council in 1967 which urged that co-operation procedures in the event of marine pollution be studied. Preamble to the Agreement.

434. Article 4(a), (b).

435. Article 4(c).

pollution and the nature and extent of oil slicks "likely to constitute a serious threat to the coast or related interests of one or more Contracting Parties."[436] When a Party learns of such a casualty or oil slick it must immediately inform the threatened Party.[437]

Each Party is responsible for monitoring oil pollution within a specified zone of the North Sea.[438] Most zones are the exclusive responsibility of one State (this is the case with Norway), but the U.K. has, in addition to an exclusive zone, shared responsibility in two zones: 1) with Belgium and France; 2) with France.[439] The zonal authority must assess the danger presented by the casualty or oil slick and continue observation so long as the menace remains within the area. Threatened States must be informed immediately of the assessment and action taken.[440] The zonal authority is not obligated to abate oil slicks or deal with casualties which it may discover in its area of responsibility, though, as zones are based on geographic proximity to the responsible State, co-operative action transcending the express requirements of information sharing is probable. A Party which does require assistance is authorised to request help from other members of the Agreement which, in turn, are required to "use their best endeavours" to fulfill the request.[441]

The Bonn Agreement is of limited utility for a variety of reasons

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436. Article 5(2).

437. Article 5(1).

438. Article 6.

439. Annex.

440. Article 6(1), (2).

441. Article 7.

all of which, in the writer's view, are traceable to that instrument's inability to adapt. The Bonn Agreement was drafted before offshore petroleum development in the North Sea had really commenced. The co-operation contemplated is therefore that necessary following a shipping casualty--the *Torrey Canyon* situation. As a comparison of Figures III-1 (p. 125) and III-2 (on the following page) will readily indicate, the zones of responsibility do not conform to the delimitation of the continental shelf. This would make extension of the Agreement to oil pollution resulting from seabed operations awkward. Christian Hambro has suggested the need for

1. A common policy among the Parties on dealing with oil spills.
2. Guidelines for Party co-operation in actually dealing with a pollution incident.
3. General agreement on compensation for assistance.[442]

Professor E.D. Brown has commented that it is surprising that non-oil substances were not included in the Agreement, especially since the requirements of co-operation only would appear to be singularly unobjectionable.[443] Perhaps the points raised by these two commentators will be discussed and acted upon at a planned meeting of the Bonn Agreement which is to consider additional international co-operation to control oil pollution.[444]

It is suggested that consideration be given to the establishment

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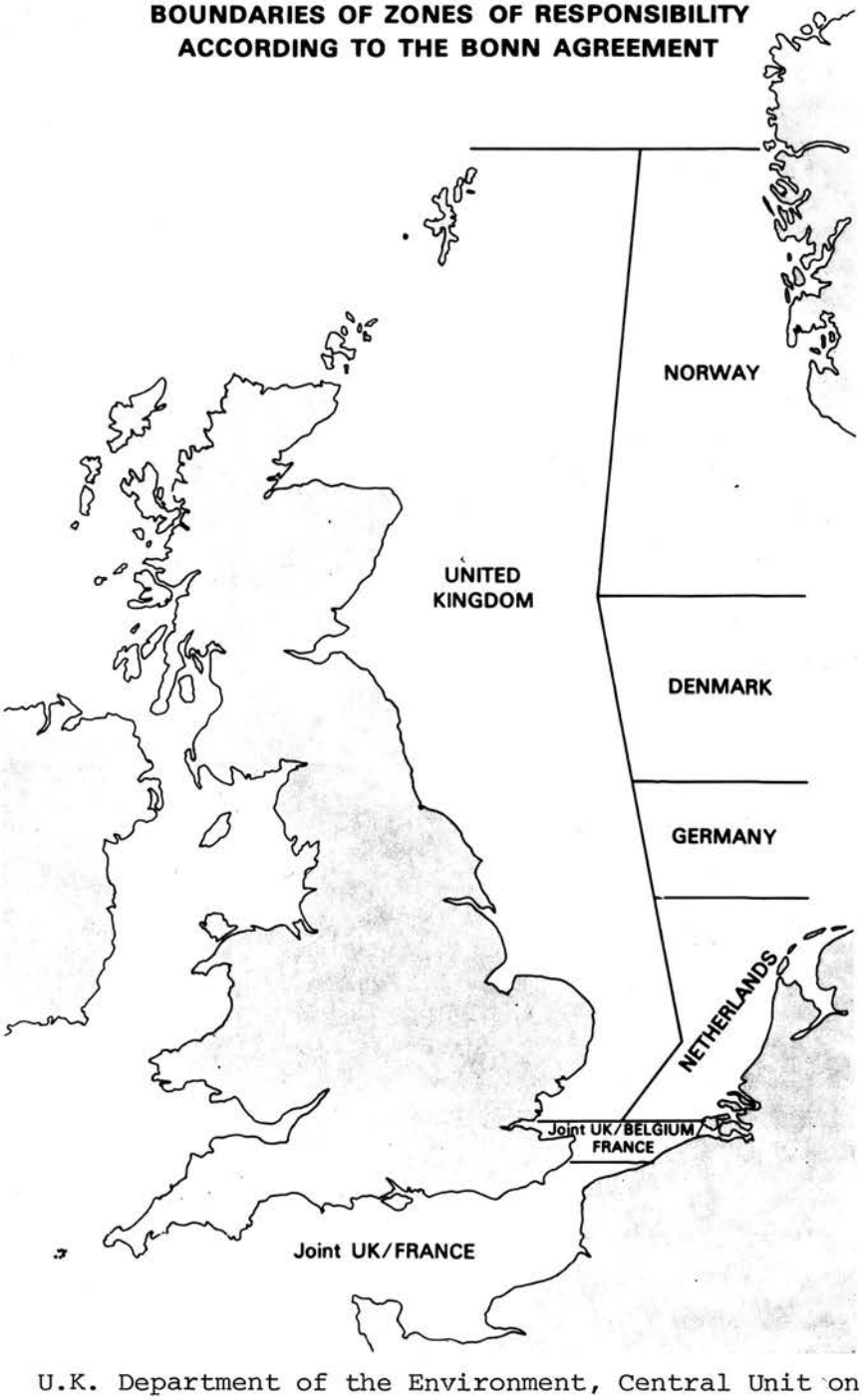
442. Hambro, C., "International Conventions Relating to Pollution Resulting from Offshore Oil Activities in the North Sea Area," a paper presented to the Offshore North Sea Conference, Stavanger 1976, p. 10.

443. Brown, E.D., *op. cit.* in footnote 3, at p. 160.

444. Hambro, C., *op. cit.* in footnote 442, at pp. 10-11.

FIGURE III-2



Source: U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8, H.M.S.O. (1976), Figure 6, at p. 165.

of a permanent Commission to administer the Bonn Agreement. The common denominator of the enumerated criticisms is that the Agreement is inflexible: Original deficiencies remain uncorrected and growth to meet problems of a changing environment has not been possible. The Oslo Convention provides a ready benchmark: although (in the writer's view) the plain meaning of that Convention indicates a concern with the regulation of commercial dumping, the Oslo Commission has recommended that certain kinds of oil-related debris disposal also be included.[445] A Bonn Commission could well have ensured that the Agreement was a living document by similar actions--and it still could.

2. The 1971 Nordic Agreement[446]

The Agreement Between Norway, Denmark, Finland, and Sweden Concerning Co-operation in Taking Measures Against Pollution of the Sea by Oil (hereafter, the 1971 Nordic Agreement) is an instrument including essentially the same provisions as the Bonn Agreement. The major difference is that the Nordic Agreement requires Parties to obtain equipment to deal with significant oil slicks[447] and to assist other Parties in investigating violations of oil pollution regulations "within the territorial or adjacent waters of the contracting States."[448] Geographical scope is defined only by the vague criterion of adjacency and the regulations which may be violated are not identified.

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445. See above, p. 128.

446. Lay, S. (*et al.*) (eds.) *New Directions in the Law of the Sea*, Vol. II, Documents, British Institute of International and Comparative Law, London (1973), pp. 637-640.

447. Article 4.

448. Article 7.

The regulations which may be violated, though not defined are not limited. The provisions concerning vessel inspection clearly contemplate mutual assistance in the enforcement of the 1954 IMCO Convention, a step beyond the Bonn Agreement. Should the scope of the Nordic Agreement be expanded to include non-oil agents, it could well become a *de facto* amendment to other conventions (for example, Oslo) by permitting reciprocal inspection *inter partes*. Although it would be preferable to provide for such enforcement in the instrument whose terms are being enforced, if such agreement proves impossible *de facto* amendment by the 1971 Nordic Agreement (or other regional instruments) would be a welcome addition to the legal regime of pollution control in the North Sea.

CHAPTER FOUR

THE INTERNATIONAL LAW OF LIABILITY FOR MARINE POLLUTION

A. Introduction

The unification of the international law of civil liability for marine pollution through conventions removes some of the ambiguity from situations otherwise governed by international customary law. How precise a given convention is and its acceptability to potentially conflicting interests will depend upon the circumstances. The law of liability is primarily concerned with obtaining compensation for the victim. Unification of civil liability rules can assist a legal regime to approach this objective in three important ways:[1]

1. It can reduce the practice of "forum shopping" by which those victims with greater resources receive greater compensation than their less affluent brethren. If the view that public policy ought to encourage a system of law which compensates for loss for *all* victims is accepted, the reduction of forum shopping is to be welcomed.

2. It can reduce conflicting laws and judgments. It is well known that merely obtaining a judgment does not ensure that the victim will be compensated, and one contributor to this unacceptable situation is the complexity of the conflict of laws.

3. The victim may be denied compensation completely if he is subject to the law of a particular State. This may or may not appear to be "fair," but the wider forum provided by a convention is likely to result in a closer approximation of "international public policy"--to the extent it exists.

Sections "B" and "C" below are concerned with conventions dealing with liability for damage from seabed operations, and liability for damage from vessels. In the case of the former, international

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1. Fleischer, C., "Liability and Compensation," a paper presented to the Offshore North Sea Conference, Stavanger (1974).

customary law (and private agreements) still determine the rights and duties of the parties in such cases, for no convention concerned with liability for such operations is yet in force. The section of this thesis on vessels contains a discussion of two IMCO Conventions which are limited to liability for oil pollution. Although the IMCO Legal Committee is devoting considerable time to the possibility of a convention concerned with liability for pollution damage caused by non-oil agents, at present recovery for such damage remains governed by the rules of international customary law.[2]

B. Liability for Damage from Seabed Operations: The 1976 Convention

The March, 1973 meeting of North-West European States considered both the technological and safety aspects of pollution from seabed operations, and civil liability for such damage.[3] The Conference devoted three days to the latter topic, concluding that "a regional solution by way of a Convention between members of the Conference was considered desirable."[4] It was decided that the first step should be the exploration of a voluntary arrangement among offshore operators and secondly, the formation of a working party to draft a regional convention which could then be submitted to a further meeting of all the participating States.[5]

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2. IMCO, *Annual Report* (1975-1976), para. 67, p. 18.

3. See above, at p. 141.

4. Conference on Safety and Pollution Safeguards in the Development of North-West European Offshore Mineral Resources, Summary Papers (12-23 March 1973), SPC(73)20 Final, para. 3.

5. *Ibid.*, para. 4.

In 1974 a Draft Convention was produced by the Working Group during a session at The Hague. This Draft served as a basis for further discussion during a meeting in Paris in November of that year.[6] At the Paris meeting, at a bilateral U.K.-Norwegian discussion in August, 1975, and at a Conference held in London in October, 1975, further progress was made. Following the London Conference, it was possible for one member of the Norwegian delegation to write that agreement had been reached that liability should be strict and limited: only the level of liability remained as a major issue.[7] This issue was resolved following several meetings of technical experts. A Convention was concluded on 17 December, 1976,[8] and will be open for signature in London from 1 May 1977 to 30 April 1978.[9]

The discussion below highlights important aspects of the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Seabed Mineral Resources (hereafter, the Convention). References to *travaux préparatoires* concern activities at the October, 1975 London Conference. The four main areas of concern are pollution damage, strict liability, limited liability, and other provisions.

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6. Intergovernmental Conference on the Convention on Civil Liability for Oil Pollution Damage from Offshore Operations, Conference Papers (20-31 October), General (C. L. 2).

7. Hambro, C., "International Conventions Relating to Pollution Resulting from Offshore Oil Activities in the North Sea Area," a paper presented at the Offshore North Sea Conference, Stavanger (1976), at p. 13.

8. General C. L. 39(76).

9. The Convention will enter into force on the ninetieth day following the date of deposit of the fourth instrument of ratification, acceptance, approval or accession. Article 20(1).

1. Pollution damage

The operator of an installation at the time of an incident shall be liable for any resultant pollution damage.[10]

> "'Pollution damage' means loss or damage outside the installation caused by contamination resulting from the escape or discharge of oil from the installation and includes the cost of preventive measures and further loss or damage outside the installation caused by preventive measures."[11]

The Convention applies only to oil contamination, a restriction that excludes damage caused by debris dumping, fire, explosion, and that which is caused by the discharge of refined products not defined as oil.[12] The vague and undefined term "contamination" clearly applies to the coating of nets, vessels and beaches, but its scope must eventually be determined by the practice of courts applying national law pursuant to the rules of private international law, where applicable.[13] Although it has been observed that the Convention does

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10. Article 3(1). Liability for a series of occurrences attaches to the operator at the time of each occurrence.

11. Article 1(6).

12. "Oil" means crude oil and natural gas liquids in any effluent, including crude oil treated to facilitate transportation, as by adding or removing fractions. Article 1(1). The U.K. delegation wanted natural gas liquids excluded because the Oil Industry International Exploration and Production Forum (E and P Forum) had given assurances that such substances posed no risk of pollution. Delegations from Denmark, France and the Netherlands pointed out that if there was no risk that oil companies might be liable, there was no need to narrow the Convention. C. L. 11/Rev. 1, p. 2.

13. Hambro, C., "The Draft Convention on Civil Liability for Oil Pollution Caused by Exploration and Exploitation of Subsea Mineral Deposits," a paper presented to the seminar on maritime law, Scandinavian Institute of Maritime Law, Oslo (21 January 1976), at p. 5. Translation of this paper from Norwegian was made possible by a grant from the Ford Foundation.

not by its terms bar recovery by such claimants as disappointed holiday makers,[14] as neither U.K. nor Norwegian courts are likely to permit recovery without proof of economic loss, the Convention may in these cases be little improvement over the *status quo*. This point is likewise relevant to environmental damage which is notoriously difficult to quantify and may be excluded from the geographical scope of the treaty. The new Convention will apply only to incidents which occur beyond the coastal low-water line at an installation under the jurisdiction of a Controlling State,[15] and which cause damage in the territory of a State Party or in the areas in which, in accordance with international law, it has sovereign rights over natural resources.[16] Compensation for contamination of fish in the high seas above the continental shelf is payable only if they have been reduced to possession.[17]

Oil must come *from* the installation; thus, the operator would not be liable for damage caused by oil leaking from a tanker which collided with the installation or from failure of *ship's* equipment

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14. *Ibid.*

15. Article 1(4).

16. The elliptical formulation concerning "sovereign rights" is a change from the 1975 Draft Convention provision which referred to the "continental shelf," and is clearly intended to permit jurisdiction to extend beyond the continental shelf. (See the discussion of the proposed EEZ in the UNCLOS III RSNT, above, at p. 145.) This provision would not affect the U.K. and Norwegian sectors of the North Sea. "Incident" means any occurrence, or series of occurrences having the same origin, which causes pollution damage. Article 1(8). Preventive actions may be taken anywhere. Article 2.

17. Hambro, C., *loc. cit.* in footnote 13.

while loading from a single point mooring buoy.

"Installation" is broadly defined, and includes:[18]

1. "Any well or other facility, whether fixed or mobile, which is used for the purpose of exploring for, producing, treating, storing, transmitting or regaining control of the flow of crude oil from the seabed or its subsoil."

2. "Any well which has been used for the purpose of exploring for, producing or regaining control of the flow of crude oil from the seabed or its subsoil and which has been abandoned after the entry into force of this Convention for the Controlling State concerned."

3. Any natural gas well while being drilled or worked upon.[19]

4. Any exploratory well involving deep drilling to search for minerals other than crude oil, gas or natural gas liquids.[20]

5. Any facility normally used to store crude oil from the seabed or subsoil.

The four major potential sources of marine oil pollution from offshore petroleum development are thus included as "installations:"

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18. Article 1(2). Where a well or wells are directly connected to a platform or similar facility, the complex will constitute one installation (for example, the Frigg Field). This is relevant to liability limitation which is based on each "installation." It is expressly provided that the Convention shall not apply to "ships" as defined in the 1969 Civil Liability Convention (discussed in the text immediately below).

19. A natural gas well is included in the Convention during drilling, but is excluded during work classified as normal maintenance. Article 1(2)(c). One concern is that oil might be encountered in drilling for natural gas liquids. Resultant pollution could come within the Convention.

20. The requirement of deep drilling would appear to exclude present sand and gravel extraction as well as possible gathering of manganese nodules from the seabed. The latter possibility appears to be remote in any case; a chart, "Surface Distribution of Ferromanganese Deposits on the Ocean Floor," distributed by the U.N. Institute for Training and Research (UNITAR) indicates no significant deposits of those minerals in the North Sea. Map No. 2696X, undated, based on data from Lamont-Doherty Geological Observatory, Columbia University, New York.

mobile platforms, fixed installations, storage installations, and pipelines. As installations are covered only insofar as they are substantially or completely seaward of the low-water line,[21] pipeline leakages which enter the sea from the land would not come within the Convention.

Preventive measures include reasonable measures to minimise pollution damage, including those taken by the operator--except for "well control measures and measures taken to protect, repair or replace an installation."[22] This drafting was intended to prevent the operator from not acting because of cost to him, and is also intended to prevent him from recovering the substantial cost of relief well drilling at the expense of other claimants, since it is to his advantage to do this anyway to preserve the reservoir.[23]

2. Strict liability

The Norwegian position throughout negotiations was that liability ought to be strict: offshore petroleum development is a hazardous activity the risks of which ought to fall on the entrepreneur rather than an innocent victim. The initial British view was that this burden on offshore operators would be too great, but by the 1975 London Conference the U.K. delegation had agreed that, subject to exceptions, the operator of the installation at the time of an incident would be strictly liable for oil pollution damage.

The "operator" is the person so designated by the Controlling

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21. Article 1(2). This limitation was introduced by the U.K. delegation to exclude land installations such as refineries. C. L. 11/Rev. 1., p. 3.

22. Article 1(7).

23. Hambro, C. *op. cit.* in footnote 13, at p. 6.

State, whether licensee or not, and in the absence of such designation the person in overall control of installation activities.[24] If an installation has more than one operator they shall be jointly and severally liable.[25] Joint and several liability also applies when damage results from two or more installations or when there has been a change of operators during the incident, unless such damage is reasonably separable.[26] Liability is channeled through the operator: no claim outside the Convention may be made against the operator, and no claim at all lies in respect of his servants and agents.[27] This provision is somewhat more restrictive than alternatives considered which would have barred claims against *any person* directly or indirectly involved in the activities of the operator, or against the servants or agents of such persons, and which would have included preventive measures or salvage operations.[28] The adoption of the narrower provision is strong evidence to support the plain meaning of Article 4 that actions not expressly prohibited therein are permitted. It is likely that persons, such as subcontractors, who are liable to

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24. Article 1(3). The "Controlling State" is the State exercising "sovereign rights in the area in which the installation is situated or in the case of an installation extending into two or more such areas, the State designated by agreement. Article 1(4).

25. Article 3(2).

26. Article 5.

27. Article 4. It is provided that nothing in the Convention shall prejudice the question of whether the operator liable for damage has a right of recourse. Thus, the burden of proving negligence and collecting damages from a third party is transferred from the victim to the operator.

28. Proposals listed in Draft Convention Article 4.

suit outside the Convention may insist on "hold harmless" clauses in contracts for offshore activities and may contract for insurance as well. Such persons are not likely defendants unless the damage is of such severity that a plaintiff finds it advantageous to use a "defendant of convenience" to avoid the Convention liability limits.[29]

Three exceptions to strict liability are provided: cases of *force majeure*,[30] instances in which a well was abandoned pursuant to the authority of the Controlling State more than five years before the incident,[31] and, where the victim was in some measure responsible for his injury, to the extent of that responsibility.[32]

3. Limited liability

a) The 1975 Draft Convention

The fundamental difference between the U.K. and Norway concerning liability limitation resulted in large part from differing estimates of probable and possible pollution damage.

The Draft Convention produced in 1974 left the question of a ceiling on liability open. Norway and another delegation favoured unlimited liability; the U.K. and the remaining States urged limits

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29. An example of this practice is the increasing tendency to sue the manufacturer of the aircraft involved in commercial airline injury and death cases, in addition to the airline which is likely to be protected by convention liability limits. Martin, P., "Death and Injury in International Air Transport," 41 *Journal of Air Law and Commerce* 255-269 (1975), at pp. 262-264.

30. Article 3(3). This includes war, hostilities, civil war, insurrection, or a natural phenomenon of an exceptional, inevitable and irrestible character, a deliberate adoption of the 1969 Civil Liability Convention formulation. C. L. 13/Rev. 2., p. 5. A U.K.-French Amendment which would have also excluded the operator from liability for pollution damage caused by terrorism or sabotage was not accepted. W. G. 30.

31. Article 3(4).

32. Article 3(5).

ranging from 20 to 40 million dollars per incident.[33] This impasse was broken at the October, 1975 Conference when the Norwegian Government indicated a willingness to accept a limitation on operator liability subject to the conditions that

1. The ceiling should be set sufficiently high to cover possible pollution damage.

2. Contracting States should have the right to stipulate a higher limit than specified in the Convention, or no limit at all.[34]

Agreement on the ceiling of liability depended upon some common view of possible damage and limits of the insurance market. In the Norwegian view, a blowout[35] might result in damages of up to $60 million; the Association of Norwegian Insurance Companies had indicated that $40 million was an insurable amount.[36] The U.K. position was that the maximum insurance available per operator was an amount between $20 and $25 million, and that costs following a blowout would be well within a $25 million liability limitation in the worst conceivable incident.[37] The Conference also had for consideration a document made available by the E and P Forum, estimating the cost of the 1969 Santa Barbara blowout at $16 million.

Although agreement was not reached on the issue of liability limits at the London Conference, the U.K. and Norwegian delegations

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33. General (C. L. 2), p. 5.

34. General (C. L. 5), p. 4.

35. Damage caused by a pipeline rupture was estimated to be far less than from a blowout.

36. General (C. L. 5), p. 4.

37. General (C. L. 7), p. 4; Note (undated and unpaged). The U.K. also thought that a State Party should not have the right to

were moving towards compromise by its conclusion. In a "Compromise Proposal by the Norwegian Delegation Based on Chairman's Proposed Formula," it was proposed that the limit of liability be $50 million, each Party retaining the right to impose higher or unlimited liability for operators within its own jurisdiction.[38] Insurance would only be required to a limit of $30 million. On the final day of the Conference, Norway proposed a further compromise: liability would be limited to $35 million and compulsory insurance to $25 million for five years, after which the ceiling would rise to $45 million and $40 million respectively.[39] The U.K. delegation was unable to accept this proposal, objecting not only to the limits, but to the requirement of self-insured excess which it was believed would prevent any but the largest companies from expanding their operations.[40] This difference of opinion (a reflection of the underlying divergent U.K. and Norwegian oil development policies evident throughout the negotiations) was not overcome and the Conference concluded by producing a second Draft Convention rather than an instrument open for signature.

In December 1975, a Meeting of Technical Experts was convened in Paris to consider possible maximum oil outflow and pollution damage. By May of 1976, estimates, based on this and subsequent meetings, had been received from all States which had attended the Conference. Estimated valuation of damages for a blowout of 10,000 tons per day

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vary the liability limits of the Convention within its own territory.

38. W. G. 45.

39. W. G. 53.

40. C. L. 14/Rev. 1, p. 1.

ranged from $275.5 million (Germany) to $30 million (U.K.).[41] (Norway submitted a partial estimate which did not include a total.) A blowout of 3,000 tons per day was estimated to result in damage of between $265.5 million (Germany) and $17.5 million (U.K.). It should be pointed out that the German estimates were far higher than the next highest, which were $117.4 million for 10,000 tons per day (Denmark) and $62.1 million for 3,000 tons per day (Netherlands).[42] The estimates accumulated in 1976 were used by the Chairman as a basis for discussion in the December 1976 Conference which resulted in a Convention.

b) Convention liability limits

Four basic provisions constitute the skeletal structure of liability limitation. First, the operator is entitled to limit his liability for each installation and each incident to 30 million Special Drawing Rights[43] (hereafter, SDRs) for five years after the Convention has been opened for signature, after which the ceiling will be raised to 40 million SDRs.[44] Secondly, the operator is required to maintain insurance or other financial security in such amount and of such type as the Controlling State shall specify, but the amount must be at

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41. Minutes of the Meeting of Technical Experts, held on 3 and 4 May 1976. Estimates of flow duration were either 100 or 90 days for both quantities of oil.

42. In addition, the E and P Forum submitted an estimate of $25 million based on a computer program which examined 5,000 accident possibilities. *Ibid.*

43. Special Drawing Right is defined as that which is used by the International Monetary Fund. Article 1(9).

44. Article 6(1). In the event that more than one operator is liable, the aggregate liability shall not exceed the highest amount that could be awarded against any one of them. Article 6(3).

least 22 million SDRs initially and 35 million SDRs five years after the Convention is opened for signature.[45] Thirdly, provision is made for changing the amounts of the liability ceiling or financial security required.[46] Finally, it is provided that a State Party may deviate from the Convention's liability limits:

> "This Convention shall not prevent a State from providing for unlimited liability or a higher limit of liability than that currently applicable under Article 6 for pollution damage caused by installations for which it is the Controlling State and suffered in that State or in another State Party; provided, however, that in so doing it shall not discriminate on the basis of nationality. Such provision may be based on the principle of reciprocity."[47]

These four points will be discussed immediately below.

The provisions relating to liability limits and required financial security are very close indeed to the Norwegian compromise proposal. At the time the Convention was agreed, December 1976, the value of a SDR as expressed in U.S. dollars was approximately $1.17. Thus, the initial liability limit was approximately $35 million with a scheduled rise to approximately $47 million in five years.[48] Insurance requirements were $26 million rising to $41 million.

The use of SDRs as a measure of liability is a most unusual

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45. Article 8(1). This provision does not apply to operators which are States Parties (that is, the British National Oil Corporation and Statoil), and the Controlling State may exempt any operator from this requirement in relation to claims arising from acts of sabotage or terrorism. Article 8(1), (5). The latter provision is clearly a compromise between the U.K. view that the operator should not be liable for damage caused by acts of terrorism and the Norwegian view to the contrary.

46. Article 9.

47. Article 15(1).

48. "Convention on Civil Liability for Oil Pollution Damage from Offshore Operations," an undated paper published by the E and P Forum, at p. 2.

provision. Previous liability conventions in the fields of both maritime[49] and air[50] law used gold francs as the monetary system for establishing liability. This was done for two reasons:

1. To establish a standard independent of currency fluctuations.

2. To protect against inflation by linking the limits to the real value of gold.[51]

Suitability of the gold standard to liability convention objectives has become subject to doubts, however, because floating exchange rates and high and fluctuating free market gold prices mean courts must decide whether to use the "official" or "free market" value of gold as the basis of conversion.[52] One disadvantage of the gold standard is that it is reckoned on a single relationship, that of the currency in question to gold. A more stable relationship would be possible by linking the value of gold to several currencies,[53] or using SDRs *instead* of gold as a unit of value.[54] The new Convention has adopted the latter approach: as SDRs are defined "as a cocktail or basket of the 16 currencies of countries that each

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49. See the discussion of the 1969 Civil Liability Convention immediately below.

50. An example is the Convention for the Unification of Certain Rules Relating to International Transportation by Air (1929), commonly known as the Warsaw Convention. 137 *League of Nations Treaty Series* 11 (1929).

51. Heller, P., "The Value of the Gold Franc--A Different Point of View," 6 *Journal of Maritime Law* 73-103 (1974-75), at pp. 94-95.

52. Asser, T., "Golden Limitations of Liability in International Transport Conventions and the Currency Crisis," 5 *Journal of Maritime Law* 645-669 (1974), at p. 646.

53. *Ibid.*, pp. 666-667.

54. *Ibid.*, p. 668.

do 1% or more of world trade,"[55] the problem of "official" versus "market value" will not arise. The Convention is presently unique in its use of SDRs; it is suggested that application of the new measure of liability will be observed closely by organisations interested in concluding new liability conventions or amending present agreements.[56]

Although the Convention is not linked to an external index (for example, a consumer-price index) to counteract the influence of inflation, provision is made for amendment of liability or insurance limits.[57] A Committee composed of a representative of each State is established pursuant to the Convention for the sole purpose of considering this question. If a State Party considers that liability or insurance limits are inadequate, or otherwise unrealistic, that State may convene a meeting of the Committee to consider the matter.[58]

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55. Heller, P., *op. cit.* in footnote 51, at p. 103, quoting from *The Economist* (15 June 1974), at p. 107, and referring also to *IMF Survey* of 17 June 1974.

56. "According to the *Outline of Reform of the international monetary system*, 'the SDR will become the principal reserve asset and the role of gold and of reserve currencies will be reduced. The SDR will also be the *numeraire* in terms of which par values will be expressed.'" *Ibid.*, quoting *IMF Survey* of 17 June 1974, p. 196.

57. Article 9. The problem of what to do about inflation--if anything--in regard to liability limits incorporated in a Convention was a major obstacle to agreement as late as November 1976. Conversation with Professor Carl August Fleischer, 12 November 1976. Article 9 reflects a Swedish proposal that a standing Committee comprised of all member States be established to review the adequacy of Convention liability limits. W. G. 46. The proposed Committee would have met annually, unlike the adopted provision which contemplates *ad hoc* meetings called by concerned States Parties.

58. Article 9(2).

The Committee will take decisions by an affirmative vote of at least three-quarters of the States Parties to the Convention,[59] but may only *recommend* changes to member States.[60] A tacit acceptance procedure is employed, whereby States Parties which have not notified the depository Government[61] that they are unable to accept the recommended amount within six months of notification[62] shall be deemed to have accepted it.[63]

Article 15(1), which permits deviation from Convention liability limits and which was quoted above, is the price paid for agreement. This provision may be justifiably criticised as defeating one of the primary purposes of the Convention, *viz.* the establishment of uniform standards.[64] The Norwegian insistence on higher or unlimited liability limits is a perceived self-interest not unlike that of the United States in relation

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59. *Ibid.* In making its recommendation the Committee must take into account events causing or likely to cause pollution damage which relate to the objects of this Convention (for example, damage caused by another blowout in the Santa Barbara Channel), changes in abatement and clean up costs, and the availability of insurance against the risk of liability for pollution damage.

60. *Ibid.*

61. The U.K. is the depository Government. Articles 19 and 26.

62. The six-month period may be altered by agreement and specified in the recommendation.

63. Article 9(3), (4). A State acceding to the Convention is only bound by a unanimously accepted recommendation. This provision, plus the procedure for change by a three-fourths majority vote, raises the possibility that some States may be bound by the amended limit, while others are bound by the unamended limit. Article 9(5).

64. States Parties which have elected to provide for higher liability must apply the law of the Controlling State to determine the amount of the operator's liability. However, States Parties which do not elect to be bound by Article 15 are not affected by its provisions authorising higher liability. Article 15(2), (3). It is possible, therefore, for plaintiffs damaged in different States Parties to have varying limits restricting their claims.

to the Warsaw Convention concerned with carriage by air.[65] The writer agrees that this provision is regrettable, but considers that the only real choice was a Convention including such a provision or no Convention at all.

4. Other provisions

The Convention is similar to the 1969 Civil Liability Convention in that the operator must constitute a fund equal to his possible maximum liability to avail himself of limited liability.[66] Like the earlier Convention, a person liable may himself claim for the costs of preventive measures,[67] constitution of the fund precludes levy against other assets,[68] and the insurer is also entitled to establish a fund.[69] The

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65. U.S. dissatisfaction with the limited liability provisions of the Warsaw Convention (concerned with air carrier liability for passenger injury or death) prompted that State to require that any air carrier engaged in international transportation which involves a point in the U.S. that is the origin, destination or an agreed stopping place, accept liability several times that specified in the Warsaw Convention. Lowenfeld, A. and Mendelsohn, A., "The United States and the Warsaw Convention," 80 *Harvard Law Review* 497-602 (1967).

66. Article 6(5). The fund must be constituted in the State Party in which the action is brought. Actions may be brought only in the courts of any State Party where pollution damage occurred or in the courts of the Controlling State. Damage suffered in an area in which a State has sovereign rights over natural resources pursuant to international law shall be deemed to have been suffered in that State. Article 11.

67. Article 6(10). The fund shall be distributed among claimants *pro rata*. Article 6(6).

68. Article 7(1). This provision only applies if the claimant has access to the court administering the fund and the fund is actually available to satisfy his claim. Article 7(2). Moreover, the operator may not limit his liability if it is proved that the pollution damage was caused by his act done deliberately with actual knowledge that pollution damage would result. Article 6(4).

69. Article 6(12). A claim for compensation may be brought directly against the insurer. Article 8(3).

requirement that an operator constitute a fund has been criticised on the basis that, unlike the Civil Liability Convention which applies to ships, this Convention concerns assets which cannot readily be moved from the jurisdiction and a fund is therefore not necessary.[70] While conceding that this point has merit, it may also be observed that the requirement of liquid assets in a fund specified for satisfaction of claims affords oil pollution victims a convenient source of compensation when compared to the complex procedures which may be required to convert a defendant's assets into cash.[71]

The States Parties may by unanimous agreement invite States bordering the North Sea, the Baltic Sea or the Atlantic Ocean North of 36° N. to accede to the Convention.[72] This provision clearly contemplates the possibility of including Oslo and Baltic Convention States within the new legal regime.[73] The Convention may, therefore, become the cornerstone of a larger regional structure. Indeed, should subsequent treaties among other regional States be concluded on the lines of this instrument, even larger arrangements may emerge. The result could be the development of global or quasi-global standards and procedures from a regional agreement rather than from a

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70. E and P Forum, *op. cit.* in footnote 48, at p. 2.

71. It is also possible for a mobile installation to be moved out of the jurisdiction, although a licensee who wished to retain his right to conduct petroleum development operations in the licensed area would be unlikely to engage in such behaviour or permit a subcontractor to do so.

72. Article 18.

73. Oslo Convention States which have not signed the new Convention are Finland, Iceland, Portugal, and Spain. Baltic Convention States which have not signed the new Convention include Finland, the German Democratic Republic, Poland, and the Soviet Union. Article 18 would also permit the United States and Canada to accede to the Convention.

world conference of States, such as UNCLOS III. It is the writer's view that conventions invariably represent the "lowest common denominator" among States, each of which is pursuing its own self-interest.[74] The Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources, although not without fault, is the product of comparatively rich, developed countries well aware of marine pollution problems. It may therefore set higher standards than would be likely to result from a larger representation of the world's States. As such, it is a model not unworthy of emulation.

C. Liability for Damage from Vessels: The IMCO Conventions

1. The 1969 Civil Liability Convention[75]

The International Convention on Civil Liability for Oil Pollution Damage (hereafter, the Civil Liability Convention) was a companion to the Intervention Convention produced at the 1969 Brussels Conference, a meeting inspired by the *Torrey Canyon* disaster two years earlier. The Civil Liability Convention came into force 19 June 1975 and binds both the U.K. and Norway.[76] Although the Civil Liability Convention has been discussed by many writers,[77] its essential features will be outlined

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74. The writer also subscribes to Professor Cheng's view that the greater a State's perceived self-interest, the more likely that State is to insist that such self-interest be preserved. See Cheng, B., "Centrifugal Tendencies in Air Law," 10 *Current Legal Problems* 200-228 (1957).

75. Cmnd. 4403 (1970); 9 *International Legal Materials* 45-67 (1970).

76. Thirty States were Parties to this Convention as of 21 December 1976. IMCO Document CLC/Circ. 37, 21 December 1976.

77. The Civil Liability Convention is analysed in detail by Brown, E.D., in *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971), at pp. 163-181.

here as part of the assessment of the present legal regime of pollution control in the North Sea.

a) basic provisions

The three basic provisions of the Civil Liability Convention concern the form of liability, liability limitations, and the person liable.

i) strict liability

The owner of a ship at the time of an incident is strictly liable for pollution damage caused by the resultant discharge or escape of oil. Exceptions are provided in cases of *force majeure*, damage caused by a third party who intended to cause such damage, and damage caused wholly by the wrongful act of an authority responsible for maintenance of navigational aids.[78] Damage caused negligently or intentionally by the victim exonerates the owner wholly or partially from liability to that person.[79]

Why should an owner who has exercised reasonable care be held liable regardless of his fault? The comments of authorities on the theory of civil liability invariably involve a comparison of the owner's and the victim's position. The owner, it is argued, is in a far better position to bear and distribute the risk which is, after all, caused by his entrepreneurial efforts.[80] On the other hand, the victim may be innocent, probably does not have the resources to bear the risk, and almost certainly would have severe problems in proving fault.[81]

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78. Article III(2).

79. Article III(3).

80. Mendelsohn, A., "Maritime Liability for Oil Pollution," 38 *George Washington Law Review* 1- 31 (1969), at p. 25.

81. Keeton, G., "The Lessons of the *Torrey Canyon*: English Law Aspects," 21 *Current Legal Problems* 94-112 (1968), at p. 111.

ii) limited liability

The shipowner may limit his liability to 2,000 francs per incident for each ton of his ship's tonnage up to a limit of 210 million francs.[82] Limited liability only applies if the owner constitutes a fund equal to his possible liability with an appropriate authority in any of the States in which an action could be brought (that is, the damaged State Party).[83] The fund is distributed among claimants on a *pro rata* basis.[84] The fund serves a dual purpose: it ensures that resources are available to meet claims up to the Convention limits, and it protects the shipowner, for once it is in existence, no other claims may be made against him and ships or other property held as security must be released.[85] As in other schemes involving strict liability with a ceiling, the Civil Liability Convention sets off increased probability of compensation with the certainty that liability will not exceed a pre-agreed limit.[86]

iii) owner's liability

The owner is made liable under the Convention--and he is liable only according to it.[87] Servants and agents are expressly exempt from

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82. Article V(1). The limitation does not apply if the incident occurred as a result of the actual fault or privity of the owner. Article V(2). Professor Brown has pointed out that the liability ceiling was set in large part by the capacity of the London insurance market. Brown, E.D., *op. cit.* in footnote 77, at p. 174, footnote 60.

83. Articles V(3), IX.

84. Article V(4).

85. Article VI.

86. This is the case with the Warsaw Convention limiting air carrier liability.

87. Article III. When oil pollution damage results from two or more

suit, but nothing is said about other potential defendants--such as the cargo owner who is likely to have a substantial interest in the marine transportation of his petroleum--and it is clear that an action against them outside the Convention is possible. Designation of the shipowner as the exclusive defendant under the Convention apparently was the result of a compromise necessary to reach any decision,[88] but it is balanced to some extent by the Fund Convention (discussed below) which derives its revenues from cargo owners.

b) scope

As in most conventions, the definition of terms employed therein largely describes the instrument.

"Ship" means sea-going vessels "actually carrying oil in bulk as cargo."[89] In other words, the Convention applies only to tankers on cargo voyages.

"Owner" is the registered owner or, if there is no registration, the person owning the ship. In socialist States the term means the company operating the ship.[90]

"Oil" means persistent oils such as crude, fuel, heavy diesel, lubricating and whale oil, whether carried as cargo or in the bunkers of a vessel which is actually carrying oil in bulk as cargo. This definition restricts the Convention still further by excluding refined products from coverage.

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ships, the owners shall be jointly and severally liable for all damage which is not reasonably separable.

88. Brown, E.D., *op. cit.* in footnote 77, at p. 165.

89. Article I(1).

90. Article I(3).

"Pollution damage" means "contamination damage" caused by the escape of oil from the ship, wherever such escape may occur. It also includes the cost of preventive measures. "Contamination damage" is not defined, so the latent line-drawing problems inherent in this circular definition must be resolved, as they occur, by reference to the plain meaning of the terms. Clearly the term would cover the fouling of beaches; most likely it would not cover loss by fire feeding on an oil slick. Although the escape can occur anywhere, the damage must be in the territory or territorial sea of a Contracting State. The *locus* of preventive measures is not qualified, however, and may be anywhere.[91]

Finally, it should be observed that "claimant" is undefined and unqualified. This aspect of the Convention's scope becomes particularly significant when compared to the TOVALOP scheme discussed below, which provides that only Governments can claim reimbursement.

c) other

A certificate attesting that insurance or other financial security adequate to cover liability under the Convention is in force must be carried by ships actually carrying more than 2,000 tons of oil in bulk as cargo.[92] The flag State is charged with issuing certificates to its own ships and preventing them from trading if they are uncertificated.[93] Compulsory insurance, intended to ensure that funds are available even in cases of flag of convenience or one-ship company vessels, also applies

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91. Professor Brown's careful reading of the *travaux préparatoires* confirms the plain meaning of the Convention. Brown, E.D., *op. cit.* in footnote 77, at pp. 170-171. *Cf.* 1976 Civil Liability Convention, above at p. 226, footnote 16.

92. Article VII(1), (2), (3).

93. Article VII(6).

to the vessels of States non-Parties. Thus, Article VII(11) provides that

> "each Contracting State shall ensure, under its national legislation, that insurance or other security to the extent specified in paragraph 1 of this Article is in force in respect of any ship, wherever registered, entering or leaving a port in its territory, or arriving at or leaving an offshore terminal in its territorial sea, if the ship actually carries more than 2,000 tons of oil in bulk as cargo."

Both the U.K.[94] and Norway[95] have complied with this provision.

The possible question of whether this Article is valid under international law must be answered in the affirmative. The coastal State exercises in international customary law a right of sovereignty over its territory and its territorial sea, although the latter is qualified by a right of innocent passage. As coastal State rights do not proceed from the Civil Liability Convention, there is no question of an attempt to bind a non-Party without its consent. The possible issue of interference with the right of innocent passage, relevant were the provision applicable to ships merely transiting the territorial sea, is not a consideration in this case where compulsory insurance is indistinguishable from customs or immigration requirements which are clearly a sovereign right. It should be observed, however, that if the coastal State has relinquished some part of its sovereignty as by a treaty requiring the equal treatment of foreign vessels within the ports of States Parties, administration of the certification requirement must be impartial.[96]

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94. See below, at p. 375.

95. See below, at p. 476.

96. Both the U.K. and Norway are Parties to the Geneva Convention

A plaintiff may claim directly against the insurer, thus simplifying the claims procedure.[97] The insurer may invoke most of the defences which the shipowner might have used, and may join the shipowner in the proceedings.[98]

The issue of forum shopping discussed above is resolved by providing that the courts of the damaged Contracting State have exclusive jurisdiction.[99]

2. The Fund Convention[100]

A Resolution[101] appended to the Civil Liability Convention recognised two deficiencies of the instrument just concluded and accordingly considered that an additional compensation scheme should be elaborated, with particular reference to two principles:

> "1. Victims should be fully and adequately compensated under a system based upon the principle of strict liability.
>
> 2. The fund should in principle relieve the shipowner of the additional financial burden imposed by the present Convention."

The International Fund for Compensation for Oil Pollution Damage (hereafter, the Fund Convention) was concluded in 1971 to give effect to these

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and Statute on the International Regime of Maritime Ports, 1923 which provides for equality of access to ports normally used by seagoing vessels.

97. Article VII(8).

98. However, the insurer may not use the bankruptcy or winding up of the owner as a defence. *Ibid.*

99. Article IX(1).

100. Cmnd. 5061 (1972); 11 *International Legal Materials* 248-301 (1972).

101. Resolution on establishment of an international compensation fund for oil pollution damage, Annex to the 1969 Civil Liability Convention.

principles.[102] It is not yet in force.[103]

a) full compensation of victim

The Fund Convention provides assistance for victims who were not adequately compensated under the Civil Liability Convention because: 1) their case was covered by certain of the exceptions,[104] 2) the owner liable was unable to pay the claim, or 3) their claims exceed the liability limits.[105] Compensation is limited to 450 million francs.[106]

b) shipowner relief

The shipowner and his guarantor may seek indemnification from the Fund for liability under the Civil Liability Convention which exceeds 1,500 francs for each ton of the ship's tonnage or a total of 125 million francs, whichever is less.[107] Relief is thus available for the amount between these figures and the Civil Liability Convention ceiling of the lesser of 2,000 or 210 million francs, respectively.[108]

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102. Preamble, Article 2.

103. As of January 1977, 11 States were Parties and slightly less than one-quarter of the total quantity of 750 million tons of contributing oil required for entry into force remained to be accounted for. IMCO Document IFC/Circ.12, 5 January 1977.

104. However, the Fund does not incur obligation in cases of war, hostilities, civil war, or when the oil came from a Government ship, or when the claimant cannot prove that the damage resulted from an incident involving one or more ships. The last exemption places a heavy burden of proof on the victim. See footnote at p. 414. The Fund is also exonerated in cases of third party responsibility to the extent of that responsibility. Article 4(2), (3).

105. Article 4(1). The owner may also claim from the Fund.

106. Article 4(4). The Fund Assembly may vote to increase the maximum up to 900 million francs. Article 4(6).

107. Article 5(1).

108. The Fund need not reimburse the owner and his guarantor if it is proved that as a result of the actual fault or privity of the

c) contributions

The Fund is financed by assessing oil imports. Any person[109] who in one calendar year receives more than 150,000 tons of contributing oil[110] carried by sea at

1. a port or terminal installation[111] in a Contracting State, or

2. at any installation in a Contracting State when the point of landing was in a non-Contracting State

is liable for contributions as determined by the Assembly of the Fund Convention.[112] To facilitate such assessment, the Assembly is responsible for drafting an annual estimated budget.[113] It is interesting to note that unless a Contracting State assumes the obligation to contribute to the Fund, it is "persons" (actually, oil companies) upon whom the Fund Convention imposes that duty. The Director of the organisation established pursuant to the Fund Convention may "take all appropriate action" directly against persons who default on their obligation to contribute, but the Contracting State is responsible for the establishment and imposition of sanctions.

d) organisation and administration

The Fund will have an Assembly, a Secretariat headed by a Director

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owner the ship did not comply with several enumerated IMCO Conventions including the 1954 Convention, and such non-compliance caused the damage.

109. "Associated persons" are also included, thus precluding the division of received oil to avoid contributions. Article 10(2).

110. "Contributing Oil" includes designated crude and fuel oils.

111. This term includes offshore installations.

112. Articles 10, 11.

113. Article 12.

and an Executive Committee.[114]

The Assembly is a plenary body whose duties include matters of organisation and procedure as well as responsibility for the annual budget,[115] the annual contributions,[116] auditing and approval of Fund accounts,[117] and settlement of claims against the Fund.[118] Regular sessions of the Assembly will occur annually.[119]

The Executive Committee, constituted of approximately one-third of Assembly members,[120] is elected by the Assembly according to criteria concerned with exposure to risk from oil pollution, tanker fleet size, and quantity of oil imported.[121] The Executive Committee shall meet at least annually, but may meet more often.[122] The primary function of the Executive Committee is to act in the place of the Assembly in administering the Fund. Responsibilities in this regard include approving claim settlements and instructing the Director on matters concerning the Fund and the Civil Liability Convention.[123]

The Secretariat, composed of the Director and supporting staff, is responsible for the usual duties of the office, for example

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114. Article 16.

115. Article 18(5).

116. *Ibid.*

117. Article 18(6).

118. Article 18(7).

119. Article 19(1).

120. Article 22(1).

121. Article 22(2).

122. Article 24.

123. Article 26(b).

personnel administration, records, etc. as well as administration of the Fund's assets. The Director is the chief administrative officer of the Fund. Where internal regulations so provide, the Director may deal with claim settlement without prior approval from the Assembly or the Executive Committee.

The Fund Convention also contains detailed provisions concerning finances, voting transition, and final clauses which will not be considered.

D. Conclusion

The 1976 Convention will provide increased protection for the victims of oil pollution damage by complementing the 1969 Civil Liability Convention and the 1971 Fund Convention. Although this trio is characterised by individual deficiencies and is limited in scope collectively, the new Convention is evidence that the law of compensation for marine pollution damage is developing. Its provisions on such matters as liability and insurance limits, as well as the use of SDRs as a unit of value, will be influential in determining the course of the law of liability for marine pollution damage.

CHAPTER FIVE

INDUSTRY COMPENSATION SCHEMES

A. Introduction

Four industry agreements designed to compensate victims of damage caused by offshore petroleum development and transportation[1] became effective before agreement of analogous international conventions regulating liability. Table V-1 on the following pages lists three conventions discussed in Chapter Four and the industry compensation schemes described below. The tabular summary of characteristics is intended to facilitate comparison of the two approaches to compensation for damage relating to petroleum development.

B. Compensation for Damage Caused by Seabed Operations

1. Offshore Pollution Liability Agreement[2]

Companies Parties to the Offshore Pollution Liability Agreement (OPOL) accept strict liability up to a maximum of $25 million per

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1. In addition to the agreements described in this chapter, the Institute of Petroleum's *Code of Safe Practice for Drilling and Production in Marine Areas* and the International Chamber of Shipping's "Pollution Prevention Code" are relevant. The *Code of Safe Practice* is a technical publication providing guidelines for offshore drilling; the "Pollution Prevention Code" voluntarily implements certain parts of the 1973 IMCO Convention and was described briefly at p. 161.

2. OPOL came into effect on 1 May 1975 and will remain in force for six years and thereafter from year to year. Clause XI; "OPOL," a booklet published by the Offshore Pollution Liability Association Limited, London (1976), at p. 3. The Agreement has been amended twice. The amendments of 12 September 1975 extended the geographic scope to States other than the U.K., clarified the definition of "Public Authority," and re-defined the term "Offshore Facility" to include wells and to exclude facilities relating to gas except during certain periods. On 23 March 1976 the original liability limit of $16 million was increased to $25 million, following agreement of members that

TABLE V-1

A COMPARISON OF COMPENSATION SCHEMES

Scheme	Who May Claim	Costs Covered	Place of Damage	Liability		
				Who	Type	Limits
1969 Civil Conv.	Any person	Damage & prevention costs for persistent oil from tankers carrying oil	Territory of State Party	Ship owner	S	$134/ton of adjusted net tonnage or $14 million
1971 Fund Conv.	Any person	Costs outside 1969 Civil Conv.	Territory of State Party	Cargo receivers	S	$30 million per incident
TOVALOP	Governments	Removal & prevention costs for persistent oil from tankers	Coastlines	Ship owner or bareboat charterer	PF	$100/GRT or $10 million
CRISTAL	Any person or Government	Damage & prevention costs for persistent oil from tankers carrying oil	Territory of State Party	Cargo receivers	S	Difference between $30 million and liabilities under law and agreements
OPOL	Any person or public authority	Damage by crude oil & natural gas liquids	Anywhere	Operator	S	$12.5 million per incident
	Public authority	Remedial measures	Anywhere	Operator	S	$12.5 million per incident

Scheme	Who May Claim	Costs Covered	Place of Damage	Liability		
				Who	Type	Limits
1976 Civil Conv.	Any person	Damage & prevention costs for crude oil & natural gas liquids	Territory & area of sovereign rights of Party	Operator	S	30 million SDRs, rising to 40 million SDRs in 5 years
Consul-tative Group	U.K. fishermen	Damage to fishing gear	U.K. sector	U.K.O.O.A.	CD	None stated

Legend: S is strict liability, PF is presumed fault liability, CD is committee discretion

incident[3] for pollution damage and for the cost of remedial measures when injury has resulted from an escape or discharge of oil[4] from offshore exploration or production operations.[5]

OPOL is open to actual or intended operators of offshore facilities located within the jurisdiction of all North Sea States except Belgium.[6] The Offshore Pollution Liability Association Limited was formed to administer the Agreement.[7]

International conventions typically set off strict liability against a liability ceiling that can only be broken in case of actual fault or privity of the defendant;[8] however, this is not the case with OPOL because as a private Agreement it cannot bar a plaintiff from

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the lower limit was inadequate. There are no plans for further amendment at present, although the Association continues to review the acceptability of the Agreement. Letter to the writer from Mr. J.R. Keates, Managing Director, The Offshore Pollution Liability Association Limited, 22 July 1976.

3. "'Incident' means any occurrence or series of occurrences arising out of one event which results in a Discharge of Oil." Clause I(13).

4. "'Oil' means crude oil and natural gas liquids, including such materials when mixed with or present in other substances." Clause I(10).

5. Clause IV(A). "Discharge" includes "escape." Clause I(11).

6. Clauses I(3) and II(B). "Operator" is a member agreed to act as such. Clause I(5). In joint ventures the "operator" will usually be designated by the operating agreement. OPOL, *op. cit.* in footnote 4 at p. 2. "Offshore facilities" include wells, drilling units, platforms, offshore storage terminals, single buoy moorings and pipelines, but does not apply to abandoned wells, facilities for the production, storage or transport of natural gas or natural gas liquids, or any craft not being used for the storage of crude oil. Clause I(7). No membership list is available to the public, but the 16 original signatories to the Agreement include the well-known oil companies.

7. Clause II(A).

8. For example, the 1969 Civil Liability Convention provides that

pursuing other remedies under the law. Thus, the strict liability provisions are similar to those found in conventions in that the operator must demonstrate financial competence to meet possible claims,[9] he may be excused from liability in cases of *force majeure* and acts of third parties,[10] and nothing in the Agreement is intended to preclude a Party from attempting to recover all or part of the compensation paid from third parties.[11]

The OPOL liability ceiling is $25 million per incident and there is no limit on total claims against OPOL Parties.[12] A claimant who wishes to benefit from OPOL provisions is bound by the $25 million limit. However, in contrast to his position under the 1969 Civil Liability Convention, the claimant need not seek redress exclusively through the Agreement and may ignore OPOL and sue for damages under municipal law.[13]

The $25 million ceiling per incident is divided, so that $12.5 million is available to satisfy damage claims and an equal amount is

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"Where the owner, after an incident, has constituted a fund in accordance with Article V, and is entitled to limit his liability, no person having a claim for pollution damage arising out of that incident shall be entitled to exercise any right against any other assets of the owner in respect of such claim." 1969 Civil Liability Convention, Article VI(1)(a).

9. In the event the operator is unable to meet his liability under OPOL, the remaining Parties must meet such obligations. Clause III(2).

10. Clause IV(B). Acts of any Government or the claimant may also bar recovery. These exceptions are essentially those found in Article III(2), (3) of the 1969 Civil Liability Convention.

11. Clause VIII(G).

12. Letter from Mr. J.R. Keates, 22 July 1976.

13. Clause VII, OPOL, *op. cit.* in footnote 4, at p. 4.

designated to cover the cost of remedial measures.[14] Any person may claim for pollution damage and a "public authority" may claim for remedial measures.[15] Damage need not necessarily be within the waters of a State designated by OPOL.[16] As no claims have yet arisen under the Agreement, it is not yet known whether economic loss must be proved before compensation will be awarded.[17]

Division of the $25 million may well work to the disadvantage of claimants seeking compensation for clean up. Although if one category is exhausted it may be replenished by funds from the other, should the second half also be depleted, the unsatisfied claims must be pro-rated *within each category*. Clean up costs are likely to be far greater than damage claims,[18] yet they could be pro-rated even though pollution

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14. Clause IV(A).

15. "Public authority" includes both the national Government and any other public body competent under municipal law to carry out remedial measures. Clause I(4).

16. Clause IV(A); OPOL, *op. cit.* in footnote 4, at p. 2.

17. Letter from Mr. J.R. Keates, 22 July 1976. Provision is made for arbitration under the rules of the International Chamber of Commerce. Clause IX. Reference is made to this procedure in connection with another agreement, below at p. 268, footnote 56.

18. For example, an industry estimate of the economic cost of the Santa Barbara blowout computed cleanup and well-control costs at $10.4 million of the total $16.4 million. The highest damage category was "recreational value lost" at $3.1 million. As noted in the discussion above, it is unknown whether this type of damage would be compensable under OPOL. The estimated "property value loss" was $1.2 million. An estimate by the Oil Companies Exploration and Production Forum submitted to the Intergovernmental Conference on the Convention on Civil Liability for Oil Pollution Damage from Offshore Operations, London, 20 October to 31 October 1975, document L.3. This account of the Santa Barbara incident is reflected in an estimated "Valuation of Damages" submitted to the Conference by a technical Working Group. The U.K. estimate of $30 million is entirely composed of dispersant costs; other delegations allocated some damage

damage claims totalling $12.5 million are fully satisfied. Were it not for the classification system *all* claims would be pro-rated in reference to the $25 million ceiling, a more equitable distribution of relief.

The definitions of "pollution damage" and "remedial measures" support the suggestion that claims for the latter are likely to be dominant. "Pollution damage" is defined as

> "direct loss or damage (other than loss of or damage to the Designated Offshore Facility involved) by a contamination which results from a Discharge of Oil."[19]

The Agreement does not define "direct" loss or damage; the plain meaning of the term suggests that when the issue does arise the claimant will have to sustain a heavy burden of showing both proximate cause and economic loss.

On the other hand, the term "remedial measures" means any reasonable measures taken by the Party from whose facility an oil discharge occurs and by any public authority to control and clean up the oil.[20] "Reasonable" is considerably less restrictive than "direct," and compensation is likely to be awarded accordingly.

The above criticisms notwithstanding, OPOL is likely to be an effective arrangement for the settlement of most claims arising from

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costs. The Norwegian estimate was incomplete, although figures for "Combat Against Oil Slick" and coastal cleaning were $20.2 and $44.0 million, respectively. Minutes of the Meeting of Technical Experts, 3 and 4 May 1976.

19. Clause I(12).

20. A Party may be compensated for remedial measures to combat pollution from his own facility with the exception of measures to control the well or to protect, repair, or replace the facility. Clause I(14).

oil pollution caused by offshore petroleum development. OPOL was formed to provide an efficient settlement procedure, to encourage immediate remedial action by Parties, to ensure that claims can be met and to avoid jurisdictional problems.[21] The contractual edifice erected for this purpose, if limited, is sound. And, until the 1976 Convention concerning such compensation comes into force, OPOL stands alone.

2. Fisheries and Offshore Oil Consultative Group

The Fisheries and Offshore Oil Consultative Group (hereafter, the Group) was formed on 24 July 1974, thus bringing together representatives from the British Government and the offshore oil and fishing industries,

> "To exchange information on general matters concerning the fishing and oil industries, to discuss broad principles and to keep under review developments in connection with the exploitation of offshore oil and gas resources with the object of fostering close relations between the two industries so that each may carry out its operations with minimum interference to the other [and to] examine in sub-committee particular technical problems."[22]

The standing membership of the Group includes representatives from the Scottish Trawlers' Federation, the Scottish Fishermen's Federation, the British Trawlers' Federation, the United Kingdom Offshore Operators' Association (UKOOA), the Departments of Energy, Trade, Agriculture and Fisheries for Scotland (DAFS), and the Ministry

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21. OPOL, *op. cit.* in footnote 4, at p. 1.

22. Fisheries and Offshore Oil Consultative Group, *Progress Report*, June 1975, p. 1.

of Agriculture, Fisheries and Food (MAFF).[23] Other Government Departments may be advised or invited to participate when the Group thinks this appropriate. As its terms of reference indicate, the Group has no executive powers, but is primarily intended to discuss and study problems created by conflicting uses of the U.K. continental shelf and its superjacent waters. Discussion occurs in plenary sessions which are held several times annually; much of the Group's work, however, is entrusted to sub-committees. Two such sub-committees have been concerned with matters of direct relevance to this study: restrictions imposed on the movement of fishing vessels, and damage to fishing gear caused by oil-related objects in the marine environment.

The Group, recognising that the increased use of the North Sea required better communication to minimise user conflict, has agreed on three steps to facilitate the safe navigation of fishing vessels:

1. The weekly information bulletin prepared by DAFS which already contains basic information concerning offshore oil activity has been expanded to include submarine obstacles which, while not a danger to normal navigation, could interfere with fishing.

2. Information concerning emergency hazards, such as drifting buoys, is now included at the end of the regularly-scheduled late night fishing news on commercial radio.

3. At the request of the fishing industry, the positions of navigational hazards are now provided in Decca readings as well as the traditional latitude and longitude.[24]

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23. DAFS acts as Secretariat to the Group.

24. Fisheries and Offshore Consultative Group, *op. cit.* in footnote 22, at pp. 3-4. The DAFS has also published a booklet, "Fishermen and North Sea Oil Developments: A Ready Reference

In addition, the procedures intended to ensure that buoys are properly laid and marked is under review.[25]

Agreement on what if anything should be done to resolve the problem of restricted access to fishing grounds has proved more elusive. The Group has agreed to examine the impact of the offshore oil industry on commercial fishing with particular reference to the issue of fishing ground loss. The study was initially limited to investigation of the Forties Field development, but has now been extended to the entire North Sea.[26] The fishing industry is watching this investigation and awaiting its results with particular interest, for one possible recommendation which could emerge is adoption of the fishing representatives' proposal that the industry should be compensated in some way for the loss.[27]

The fishing industry was in fact successful in its quest to obtain compensation for damage to fishing gear caused by oil-related debris on the seabed. The scheme agreed upon by the Group involves a two-step claims procedure. In step one, the skipper of a fishing vessel which has suffered loss or damage of fishing gear reports the incident to the DAFS.[28] The Fishery Officer may assist in identifying the company responsible for the debris, if this is necessary, by consulting records of offshore operations in the area in which the damage

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to Offshore Activities for Fishermen," which sets out basic information.

25. *Ibid.*, p. 4.

26. *Ibid.*, p. 9.

27. *Ibid.*

28. Explanatory leaflet issued by DAFS/MAFF, July 1976.

occurred. The owner then files a claim directly with the company responsible. The difficulty here, as in other claims (such as that for oil pollution damage under the 1971 Fund Convention and implementing legislation), is proving that the alleged offender did in fact cause the injury complained of.[29] How likely is it that such common items as wire rope or anchors can be traced to their last owner when damage is caused in an area of intensive offshore activity? And even if such proof is possible, how many fishermen would conclude that on balance, the prudent course of action would be to suffer the certain loss based on equipment replacement rather than hazard the stormy seas of litigation and an uncertain return? Such considerations motivated the Group to take a second step.

If damage to fishing gear from oil-related debris occurs and the claimant is unable to identify the responsible company, he may seek reimbursement from a UKOOA compensation fund.[30] The fund is available only to U.K. fishing vessels which are damaged by debris on the U.K. continental shelf.[31] It is administered by the three fishing industry groups and a committee composed of a representative from each federation settles claims on the merits of each case. Settlement is final and binding, and is in lieu of any claim against any UKOOA

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29. Under Article 4(2)(b) of the Fund Convention, if the claimant cannot prove that the damage complained of resulted from an incident involving one or more ships, no compensation is payable. This provision, incorporated into U.K. law by S. 4(7) of the 1974 Merchant Shipping Act, has been the subject of complaint by some U.K. local authorities. Advisory Committee on Oil Pollution of the Sea, *Annual Report*, (1974), p. 8.

30. Explanatory leaflet issued by DAFS/MAFF, July 1976.

31. *Ibid.*

member arising out of the same incident.

Establishment of a compensation fund is to be watched with interest, for it may herald similar compensation schemes (voluntary or imposed) for damage caused by other offshore activity. The theory that the innocent victim ought to be compensated by the entrepreneur whose risk-taking caused the damage (and who will pass this additional cost of doing business on to the consumer in any event) will be tested. Is such an arrangement so open to fraudulent claim as to be an inequitable imposition on the offshore operator? The answers provided by the Fisheries and Offshore Oil Consultative Group will influence developments beyond its limited terms of reference.

C. Compensation for Damage Caused by Vessel-Source Pollution

1. TOVALOP[32]

TOVALOP is an acronym for Tanker Owners Voluntary Agreement Concerning Liability for Oil Pollution. This Agreement among tanker owners is similar to the OPOL arrangement among offshore operators.[33]

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32. Signed 7 January 1969, in force 18 September 1969. TOVALOP became effective when fifty per cent. of the world's tankers as measured by gross tonnage (excluding those owned by a Government or under 3,000 tons) became subject to the Agreement. Clause III. By July, 1972, over 99 per cent. of "free world" tanker GRT were subject to TOVALOP. The original Agreement is at 8 *International Legal Materials* 497-501 (1969); as amended, that Agreement is contained in "TOVALOP," a booklet published by the International Tanker Owners Pollution Federation Ltd., London (1973). The amendments expanded the definition of "oil" to include residuals, "Government" to mean local Government that a national Government will act for, and added "threat of discharge" to "discharge." An amendment to Clause IV which took effect 28 February 1977 will be included when the booklet is reprinted. Letter from Mr. D.B.A. Ockenden, Assistant to Managing Director, to the writer, 4 March 1977.

33. Like OPOL, TOVALOP is administered by an Association to which

In essence, tanker owners who have agreed to the TOVALOP scheme are presumed negligent if one of their tankers discharges or threatens to discharge oil which damages or may damage the coastline of any State.[34] However, the owner is not liable to any Government which has a right to recover under the 1969 Civil Liability Convention.[35]

a) tanker

"Tanker means a tank vessel (whether or not self-propelled) designed and constructed for the carriage of bulk petroleum by sea, regardless of whether such craft is actually used for transportation of hydrocarbons."[36] This definition, unqualified by the requirement that the vessel be carrying petroleum in bulk, is wider than the Civil Liability Convention, and would include such vessels as a surplus tanker used temporarily as a floating storage tank as well as tankers on ballast voyages.

b) owner

The "owner" of a tanker is the one who holds title thereto, except that in the case of a bareboat charter, the charterer is considered to be the owner.[37] This is significant because in practice a

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each tanker owner who is a Party to the Agreement must belong. The Association provides information and technical advice on pollution control in addition to its administrative duties.

34. Clause IV. A "threat" of discharge means "a grave and imminent danger of such a discharge." Clause I(1).

35. This amendment follows the coming into force of the Convention. It is planned to continue TOVALOP for some years. Letter from Mr. Ockenden, 4 March 1977.

36. Clause I(a). Liquefied petroleum gas and liquefied natural gas are expressly excluded.

37. Clause I(b). Under a bareboat charter, the charterer must supply the crew and necessary supplies at his own expense.

tanker owner is likely to provide in the charter agreement that the charterer is to act on his behalf and an oil company which has contracted for the vessel may well be better placed geographically and financially to deal with an oil spill than would be a tanker owner.[38]

c) presumed negligence

Liability under TOVALOP is based on negligence, but the burden of proof is reversed, the defendant shipowner being presumed negligent unless he can prove otherwise. This differs from strict liability in that in the latter case, exceptions to liability are allowed for such causes as war and the acts of third parties. But when the burden of proving negligence is reversed, these narrow categories are eliminated. A defendant might well prove that a defective valve, for example, had been carefully inspected and maintained and that the damage complained of was therefore not his fault. The plaintiff's chances of recovery even with the burden of proof reversed are thus far less under a system of fault liability.[39]

d) liability limits

The maximum liability per incident[40] under TOVALOP is the lesser

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38. Becker, G., "Vehicles for Reimbursement of Oil Pollution Damage," 9 *Houston Law Review* 669-675 (1972), at p. 670.

39. One writer has stated that presumption of fault is little more than the application of *res ipsa loquitur*, a doctrine likely to be applied in vessel-source pollution cases in any event. Furthermore, he quotes a British insurance official testifying before a U.S. Senate Sub-committee who observed that "faced with a choice between $5 million with absolute liability and $10 million with a presumption, the latter was 'a much more attractive proposition.'" Mendelsohn, A., "Marine Liability for Oil Pollution," 38 *George Washington Law Review* 1-31 (1969), at pp. 7, 19-20.

40. Clause VI. "'Incident' means any occurrence or series of occurrences having the same origin which causes, or creates

of $10 million or $100 per gross registered ton (GRT).[41] These limits are much lower than those of other legislation and agreements, and do not approach possible clean up costs which could result from an incident involving a modern supertanker. This inadequacy results from both the use of GRT as a measure of capacity to cause pollution damage and the low liability ceiling.

A "gross ton" is 100 cubic feet of permanently enclosed space within a vessel; GRT therefore has nothing to do with weight, but is an indication of volume. On the other hand, deadweight tonnage (DWT) is the actual weight of the persons and objects onboard a vessel required to bring her down to her load line from the light condition, for example cargo, stores, passengers, ballast.[42] GRT has traditionally been used to calculate liability, but DWT is a more meaningful measure because it is more closely related to the actual cargo capacity of a tanker, and it is oil carried as cargo which primarily determines the cost of oil cleanup.[43]

The *Torrey Canyon* case suggests that both the $10 million and $100/GRT liability limits employed by TOVALOP are inadequate. Although the *Torrey Canyon*'s owners paid $7.2 million to the British and French Governments, the amount claimed exceeded $16 million.[44]

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a grave and imminent danger of causing damage by pollution." Clause I(j).

41. Like OPOL, the liability limits only apply if the claimant chooses to use the Agreement.

42. Ereli, E., *The Environmental Regulation of the Sea and its Resources*, University of Houston (First draft, second printing; 1972), at p. 367.

43. Mendelsohn, A., *op. cit.* in footnote 39, at pp. 10-11 and footnote 34.

44. Note, "Liability for Oil Pollution Cleanup and the Water Quality

The *Torrey Canyon* was a 60,000 GRT tanker carrying about 118,000 tons of oil, approximately half of which was released into the sea.[45] If one accepts the figure of $16 million as the true cost of the clean up, it costs about $270 to clean up one ton of oil.[46] When, as is frequently the case, DWT exceeds GRT,[47] the clean up cost per gross ton of oil spilled will be higher. It has been calculated, for example, that in the case of the *Torrey Canyon* the DWT:GRT ratio was 2:1; the clean up cost was therefore $540 per gross ton, on the assumption that total costs were $16 million.[48] Even assuming the clean up costs to have been the $7.2 million which was actually the settlement amount, the costs come to $233 per gross ton.[49] It is therefore clear that TOVALOP would not meet the full clean up costs of a discharge like the *Torrey Canyon* in all important particulars and, *a fortiori*, the Agreement would be inadequate to compensate those who would bear the cost of cleaning up the discharged oil from one of the tankers now in operation which dwarf their predecessors.[50]

Improvement Act of 1970," 55 *Cornell Law Review* 973-991 (1970), at p. 982, and sources cited therein.

45. *Ibid.*

46. *Ibid.*, at footnote 78, citing Sweeney, J., "Oil Pollution of the Oceans," 37 *Fordham Law Review* 155-208 (1968), at pp. 157-158.

47. The ratio of carrying capacity to gross tonnage may vary from 217:1 to 1/5:1. The Federal Water Pollution Control Administration used a ratio of 1.8:1 to calculate a clean up cost of $450 per gross ton. Note, *loc. cit.* in footnote 44 (citation omitted).

48. Sweeney, J., *loc. cit.* in footnote 46.

49. Note, *loc. cit.* in footnote 44.

50. For example, the 542,000 DWT *Baillus*, one of two tankers built for Shell, has the potential to release five times as much oil

It is ironic that an Agreement, which like the Civil Liability Convention is a child of the *Torrey Canyon*, should be inadequate to compensate for clean up costs should that incident be repeated. The retention of unrealistically low liability limits in the Agreement tends to support the view of some writers that TOVALOP was merely an attempt to forestall more comprehensive national legislation.[51]

TOVALOP is also limited by restrictions on the geographic and material scope of "pollution damage" and the persons who may claim compensation.

"Damage by pollution" is limited to physical contamination damage to coastlines resulting directly from a discharge of oil. TOVALOP does not, therefore, include damage from fire or explosion, consequential damage, or ecological impairment.[52] Although "discharge" is broadly defined so as to include either an intentional or accidental occurrence,[53] "oil" is limited to crude oil and its residuals, and lubricating oil.[54] Refined products are not likely to cause the physi-

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as was possible from the *Torrey Canyon*. It should also be noted that the Agreement contains no provision to compensate for inflation.

51. See, for example, Mendelsohn, A., *op. cit.* in footnote 39, at pp. 8-9; Brown, E.D., *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971), at pp. 163-164, footnote 3.

52. Clause I(h). The definition of "coast lines" makes it clear that TOVALOP is concerned with land rather than marine pollution: "'Coast lines' means land (including structural improvements thereon) adjoining the sea, inland waterways, lakes, bays, harbours, and estuaries." Clause I(g).

53. "Discharge" includes spilling, leaking, pumping, emitting, emptying or dumping of oil. Clause I(f). TOVALOP therefore applies to both accidental and operational discharges.

54. Clause I(e). "Residuals" includes, but is not limited to, asphalt, bitumen, fuel oil and heavy diesel oil.

cal contamination to beaches with which the Agreement is concerned and are therefore excluded.[55]

A tanker owner found liable under TOVALOP must either remove the contaminating oil or pay the costs reasonably incurred by the national Government concerned for oil removal.[56] In some cases the Government may initiate cleanup action (and may be entitled to do so under statute). On other occasions neither local nor national Government may be capable of or wish to assume clean up responsibility.[57] Although TOVALOP was originally restricted to claims by national Governments, pursuant to amendment "Government" now includes local bodies on whose behalf the national Government acts. As only Governments may claim, organisations and individuals (such as beach-front property owners) may not claim compensation under TOVALOP. It is clear that this industry Agreement is a limited response to the *Torrey Canyon* which members are in no hurry to expand. The Preamble states that it is recognised that traditional maritime laws and practice may be inade-

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55. It will be recalled that although crude oil may be more obvious in the marine environment and on the beach, the toxic properties of refined products make them more dangerous to life. See Chapter Two.

56. Clause IV. Members of TOVALOP are required to maintain financial capability to fulfil obligations under the Agreement. Clause II(C). In practice, the owner's claim has been paid through insurance with Protection and Indemnity Associations (P and I Clubs) or other underwriters. Becker, G., "Short Cruise on the Good Ships TOVALOP and CRISTAL," 5 *Journal of Maritime Law* 609-632 (1974), at pp. 620, 626. Claims not settled may be resolved by conciliation and arbitration under the rules of the International Chamber of Commerce. Clause VII(K). (*Rules for the ICC Court of Arbitration*, ICC publication No. 291, is available from the British National Committee, International Chamber of Commerce, London.)

57. Letter from Mr. Ockenden, 4 March 1977. There have been no problems with the standard of cleanliness: the clean up operation continues until the authorities are satisfied. *Ibid.*

quate to compensate both Governments and tanker owners for the costs of avoiding or mitigating oil pollution damage. The patent inadequacy of the *lex lata* as a vehicle to compensate innocent victims was apparently overlooked.

It is clear that TOVALOP owes its existence more to shipowner's self interest than to the principle that someone who damages another's property ought to pay for it. Available evidence of payments made under the Agreement reinforces this view; it has been reported that as of 1974, 1500-1600 awards had been made, most of them to tanker owners.[58]

2. CRISTAL[59]

The Contract Regarding an Interim Supplement to Tanker Liability for Oil Pollution (hereafter, CRISTAL) provides a fund to augment the resources of the Civil Liability Convention and TOVALOP. CRISTAL, in force since 1971, is essentially a private interim measure intended to increase the money available for oil pollution compensation pending the coming into force of the 1971 Fund Convention.[60]

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58. Becker, G., *op. cit.* in footnote 56, at pp. 626-627. A U.K. Government claim for combatting the *Allegro-Pacific Glory* collision oil spill in 1970 (described below at p. 362) resulted in a TOVALOP payment of $800,000. Shell Briefing Service, "Oil Spills Offshore--Compensation and Remedies," (January 1976), at p. 2.

59. A copy of the Contract as amended to May 20, 1976 was made available to the writer through the courtesy of AMOCO, London. The original Contract is reproduced in 10 *International Legal Materials* 137-144 (1971).

60. CRISTAL came into force 1 April 1971, less than three months after the Contract was executed, when oil companies receiving over 50 per cent. of the world's crude and fuel oil carried by sea had become Parties. S. III(A); Oil Companies Institute for Marine Pollution Compensation Ltd., *CRISTAL*, "Memorandum," p. 3 (July 1, 1976). CRISTAL will remain in force until 120 days

Like the Fund Convention, CRISTAL seeks to spread the risk of liability for oil pollution damage by providing that in certain instances the owner of oil cargo carried by sea may become liable in an amount up to $30 million. This Contract thus provides that both interests on whose behalf the carriage of oil by sea is undertaken may become liable for certain costs of pollution abatement.[61]

CRISTAL becomes obligated to pay compensation to a claimant when the oil causing the injury was owned by a Party to the Contract at the time of the incident,[62] *and* when the tanker is entered in TOVALOP *or* the owner is liable under the Civil Liability Convention.[63] The formula to determine the amount of compensation payable under CRISTAL emphasises the supplementary nature of the Contract: as it was not intended that the oil companies assume liabilities any person might already have incurred, such sums are subtracted from the CRISTAL liability ceiling of $30 million.[64] In the case of an owner or bareboat charterer,

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after the Fund Convention becomes effective. Clause III(C)(2).

61. The administration of CRISTAL is done by the Oil Companies Institute for Marine Pollution Compensation Limited, a Bermuda Corporation which is also a Party to the Contract. As of the beginning of 1976, between 90 and 95 per cent. of the total crude oil moved by the sea was subject to CRISTAL. Shell Briefing Service, *op. cit.* in footnote 58, at p. 3.

62. An Amendment to Clause IV provides that a Party may elect to be considered the owner of oil cargo even though he in fact is not. This change was prompted by the *Metula* grounding off Chile in which case the vessel was owned by a CRISTAL Party, but the cargo was owned by a non-Party (the Chilean Government). The Amendment is designed to extend CRISTAL coverage to such cases. Conversation with Mr. H.A. Steyn, Managing Director, Marine Pollution Compensation Services Ltd., 29 March 1977.

63. Clause IV(A)(2), as amended.

64. Becker, G., *op. cit.* in footnote 38, at p. 673.

CRISTAL liability will be reduced by the owner's maximum liability under TOVALOP (the lesser of $100/GRT or $10 million) plus an additional $25/GRT for which Protection and Indemnity Clubs have assumed responsibility.[65] This "clean up deduction" ensures that CRISTAL does not pay claims for which TOVALOP is liable.

The limit of CRISTAL liability to other damaged persons is determined *after* satisfaction of shipowner's claims in excess of the clean up deduction.[66] CRISTAL liability to other persons is computed by subtracting from $30 million:[67]

1. The amount paid to the owner or bareboat charterer between his liability under TOVALOP and $30 million.

2. The amount of the owner's or charterer's liability to Governments under TOVALOP, if such Governments elect to take compensation under the scheme.

3. The owner's clean up costs up to $125/GRT or $10 million, whichever is lesser.

4. The liability of the owner or bareboat charterer under applicable law, statutes, regulations or conventions, *to the extent that such liability is reasonable enforceable and that recovery thereon is practicable.*

As CRISTAL is intended to serve as an interim Fund Convention, it is pertinent to inquire if there are significant differences between the two instruments. Three determinants of scope are of particular

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65. Clause IV(C)(1), as amended; conversation with Mr. H.A. Steyn, 29 March 1977.

66. Should the owner's clean up costs exhaust CRISTAL, other persons will receive nothing. Oil Companies Institute for Marine Pollution Compensation Ltd., *op. cit.* in footnote 60, at "Memorandum", pp. 6 and 7.

67. Clause IV(C)(2), as amended, emphasis added. The original paragraph 4 provided for deduction of the maximum amount to which such persons were legally entitled. The amended paragraph is likely to result in much smaller deductions from the $30 million

relevance: definitions, type of liability, and liability limits. (See Table V-1 on pages 252-253.)

a) definitions

CRISTAL definitions are much closer to those of the Civil Liability Convention and the Fund Convention than they are to those employed by TOVALOP. The terms "tanker" or "ship," "oil," and "pollution damage" are particularly important in describing the scope of the Contract. CRISTAL defines a "tanker" or "ship" as "any sea-going vessel and any sea-borne craft of any type whatsoever, actually carrying oil in bulk as cargo."[68] This is consistent with the Civil Liability Convention and the Fund Convention and has the practical effect of excluding discharges from tankers in ballast. It is clear that all three instruments are directed at the occasional catastrophic spill rather than operational discharges such as oily ballast water or tank washings. As major spills constitute but a small fraction of all oil entering the ocean from marine transportation, this qualification restricts the protection afforded by CRISTAL greatly.[69] In practice, most of CRISTAL's claims have been for compensation in excess of the TOVALOP plus P and I Club limit of $125/GRT in cases involving tankers of less than 5,000 GRT.[70] Even small spills from such vessels can easily cost more to clean up than is payable under the TOVALOP/P and I Club tonnage limitation, and most of the approximately $4 million paid

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available for distribution to "Persons" who qualify for CRISTAL compensation.

68. Clause I(A).

69. See Chapter Two.

70. Conversation with Mr. H.A. Steyn, 29 March 1977.

by CRISTAL at the time of this writing has been for small amounts.[71]

"Oil" means any persistent oil such as crude oil, fuel oil, heavy diesel oil and lubricating oil whether carried on board a ship as cargo or in its bunkers.[72] Should TOVALOP expand its definition of "oil" to include refined products, the CRISTAL definition would probably be amended to conform to it, but there are no plans to expand the Agreements in this respect.[73]

"Pollution damage" employs the Convention and Fund definition: it includes direct damage to the land territory and the territorial sea, and also encompasses the cost of preventive measures and further loss caused by such measures.[74] In this respect, the Contract is more liberal than TOVALOP (which is confined to damage to coastlines), but it is still pertinent to note that no one may claim for ecological damage or for injury "which is remote, or speculative, or which does not result directly from the escape or discharge."[75]

b) type of liability

It will be recalled that the Civil Liability Convention employs a standard of strict liability with enumerated exceptions, and that the Fund Convention applies when no liability arises under the Convention because of such exceptions, because the owner cannot meet his

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71. The largest claim paid was for $1.3 million which was the excess payable over the $125/GRT limits in the case of a small ship which spilled oil in the St. Laurence River. *Ibid.* Approximately $1 million in claims against CRISTAL are outstanding.

72. Clause I(D).

73. Conversation with Mr. H.A. Steyn, 29 March 1977.

74. Clause I(E).

75. *Ibid.*

financial obligations, or because the owner's liability exceeds the limits of the Civil Liability Convention.[76] CRISTAL is considerably more restrictive.

It was observed above that CRISTAL becomes liable only if the shipowner *is* liable under TOVALOP or the Civil Liability Convention. Thus, while the Fund Convention will employ a near-absolute liability standard (in effect providing insurance against the strict liability exceptions), CRISTAL adopts the Civil Liability Convention's strict liability standard by reference and adds nothing to the scope of protection afforded oil pollution victims.

The same criticism may be made in respect of the second *raison d'être* of the Fund Convention: whereas the Fund will compensate victims when the shipowner cannot meet his financial obligations under the Civil Liability Convention, the private Contract deducts the Convention maximum from its liability ceiling, regardless of the shipowner's ability to pay.

c) liability limits

It will be recalled that the maximum liability possible under the Fund Convention is $36 million, although that amount may be doubled if the Fund Assembly so decides. This figure may be compared to the $30 million CRISTAL maximum, but the comparison must be tempered with the knowledge that because of the numerous deductions allowable under the Contract, the maximum allowable compensation under that instrument is far less likely to ever be available than would be the case under

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76. Fund Convention, Article 4(1).

the Fund.[77]

It would be unfair to criticise CRISTAL for attempting to represent itself as a comprehensive private agreement intended to make reparation for any oil pollution injury. The Contract has only the modest objectives which have been mentioned above. It is not out of place, however, to observe that while CRISTAL has performed a valuable service to the world community in the creation of an interim fund, this undertaking effectively describes the limit of CRISTAL's contribution. CRISTAL must therefore be regarded as a valuable part of the legal regime of marine pollution control, but it is additional evidence that private agreements are unlikely to go beyond the scope of incipient national and international law.[78]

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77. As in the case of the other private agreements, CRISTAL liability limits only apply to claimants under the Contract.

78. Indeed, it has been observed that CRISTAL may well be rendered ineffective in some jurisdictions which establish large funds under national law, such as that proposed in several Bills now before the U.S. Congress. For example, S. 2666 (as it was during the 94th Congress, 1st Session) provides for *absolute and unlimited liability* for oil clean up costs. Sec. 5(a). On the other hand, should the U.S. pursue its own legislative remedies to the exclusion of the Fund Convention, that instrument may well remain unratified, thus ensuring the life of CRISTAL. Conversation with Mr. H.A. Steyn, 29 March 1977.

CHAPTER SIX

U.K. LAW REGULATING POLLUTION FROM SEABED OPERATIONS

A. Introduction

The present regime of British law relevant to the control of North Sea pollution has been shaped to a large extent by treaty. International customary law is generally considered to be part of the law of the land. Treaties, however, must be implemented into the U.K. legal system by enabling legislation.[1] Most of the British law discussed herein was enacted to comply with treaty obligations which bind Her Majesty's Government (H.M.G.). See Table VI-1 on the next page. There are two significant effects of this situation. First, because U.K. law must substantially conform to the terms of the treaty, Parliament's freedom to legislate is somewhat circumscribed. Even the regulation of vessels in U.K. harbours may be subject to the terms of treaties binding H.M.G.[2]

The second point is a corollary of the first: municipal law conformity with international treaty obligations is necessary because a State may not plead the absence or inadequacy of the law in answer to a claim for breach of an international duty.[3] The majority

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1. Brierly, J., *The Law of Nations*, Clarendon Press, Oxford (6th edition, 1963), at p. 89; Brownlie, I., *Principles of Public International Law*, Oxford University Press (1973), at pp. 45, 49.

2. See, for example, the remarks of Sulivan, J.A., the General Manager and Secretary, Milford Haven Conservancy Board, in "Milford Haven," a case study appearing in British Institute of International and Comparative Law, *Environmental Law: International and Comparative Aspects*, London (1975), pp. 137-144. Col. Sulivan particularly regrets the necessity that legislation controlling pollution in U.K. harbours conform to IMCO Convention requirements (at p. 138).

3. Brownlie, I., *op. cit.* in footnote 1, at p. 36. This principle was used by the arbitral tribunal in the well-known *Alabama*

TABLE VI-1

U.K. ACCEPTANCE OF POLLUTION CONTROL CONVENTIONS

Convention	Signed	Ratified/ Acceded	Relevant U.K. Law
Geneva Continental Shelf 1958	9-9-58	11-5-64	Continental Shelf Act 1964 Petroleum (Production) Regulations 1976 Mineral Workings (Offshore Installations) Act 1971 Petroleum and Submarine Pipelines Act 1975
IMCO 1954	12-5-54	6-5-55	Prevention of Oil Pollution Act 1971
IMCO 1962 Amendments		28-8-63	Prevention of Oil Pollution Act 1971
IMCO 1969 Amendments		10-5-71	Prevention of Oil Pollution Act 1971
IMCO 1971 Amendments (Tanks)		14-10-74	Merchant Shipping Act 1974
IMCO 1973			
Intervention	29-11-69	12-1-71	Prevention of Oil Pollution Act 1971
Intervention Protocol			
Oslo Dumping	15-2-72	30-6-75	Dumping at Sea Act 1974
London Dumping	13-11-72	17-11-75	Dumping at Sea Act 1974
Paris 1974	21-2-74		Control of Pollution Act 1974
Bonn	9-6-69	Not required	

Note: The Prevention of Oil Pollution Act 1971 consolidated earlier legislation.

view is that failure to achieve conformity is not itself a direct breach of international law;[4] however, many of the Parliamentary Debates during which British laws relevant to marine pollution control were discussed indicate that such conformity was intended.

Express legislation may also be necessary to extend municipal law beyond Her Majesty's realm, as was held to be the case in *R. v. Keyn*.[5] In that case, involving an alleged criminal act in U.K. territorial waters, it was held that the court was without jurisdiction because the common law extended only so far as the land was uncovered by water; beyond that line of demarcation a court of Admiralty was the appropriate forum. It was necessary that the common law be expressly extended to the territorial sea by statutory instrument. This action was in fact taken by the enactment of the Territorial Waters Jurisdiction Act of 1878.[6] The Continental Shelf Act 1964 was

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Claims case in rejecting the British defence of absence of municipal law. (United States--Great Britain Claims Arbitration, 1872, reported in Moore, *Arbitrations*, p. 653.)

4. Brownlie, I., *op. cit.* in footnote 1, at p. 38; McNair, *The Law of Treaties*, Clarendon Press, Oxford (1961), at p. 100; Fitzmaurice, G., "General Principles of International Law," 92 *Receuil des Cours* 5-227 (1957, Vol. II), at p. 89. Sir Gerald observes that although non-conformity of municipal with international obligations does not result in a direct breach of international law *ipso facto*, "the State is in a *posture* of non-compliance with its international obligations so long as this position persists." Thus, the situation is unclear when a State adopts legislation actually *contrary* to its international obligations. In some cases--such as expropriation without adequate compensation pursuant to municipal law--the law itself undoubtedly does constitute a breach. *Ibid.*

5. 2 Ex.D. 63, 168 (1876).

6. *R. v. Martin* presented a slightly different case. In that case it was held that the court *did* have jurisdiction, but there was no specific provision for extraterritorial application of U.K. law so as to make the act in question (which had occurred onboard

enacted in part to extend U.K. law to that submarine area, thus precluding the problem raised in *R. v. Keyn*.

As noted earlier, U.K. law relating to prevention of marine pollution has developed along the lines of the international conventions. Early treaties were primarily concerned with the control of vessel-source oil pollution; for example, the 1954 IMCO Convention discussed in Chapter Three.[7] The Oil in Navigable Waters Act 1955 implemented that Convention and heralded the modern U.K. legal regime of marine pollution control.[8] Refinements to legislation intended to control vessel-source oil pollution continued[9] and a succession of instruments came into force in the following years,[10] but it was not until 1974 that the scope of British regulation of marine pollution

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a U.K.-registered aircraft outside the U.K.) an offence. 2 Q.B. 272 (1956). See Cheng, B., "Crimes on Board Aircraft," 12 *Current Legal Problems* 177-207 (1959), at p. 178.

7. See above, at p. 151.

8. The Oil in Navigable Waters Act 1955 and its successors were consolidated in the Prevention of Oil Pollution Act 1971, discussed below. British legislation relating to the control of pollution dates at least from the sixteenth century, but before the middle of the twentieth century British legislation (as well as that of other States) was for the most part of limited scope and effect. See Teclaff, L., "International Law and the Protection of the Oceans from Pollution," 40 *Fordham Law Review* 529-564 (1972), at p. 529.

9. The Oil in Navigable Waters Act 1963, the Oil in Navigable Waters Act 1971. These instruments were also consolidated in the Prevention of Oil Pollution Act 1971.

10. The most important instruments to come into force in the period immediately following 1964 were the Petroleum (Production) Regulations 1976 (discussed at p. 297) and the Mineral Workings (Offshore Installations) Act 1971 (described at p. 308).

was significantly expanded. In that year the Dumping at Sea Act[11] extended the control of vessel-source pollution to substances other than oil.[12] In 1975 an important Act intended to control marine pollution from submarine pipelines was enacted, thus providing H.M.G. with express authority to control these sub-sea transportation systems.[13]

These major steps in the development of U.K. marine pollution control legislation will be discussed in detail below. The sections are organised by pollution source and applicable sections of U.K. law are discussed under each heading in chronological order. (The Petroleum (Production) Regulations 1976 replace 1966 Regulations.) A final word of introduction concerns changes which may be occurring in the international law of the sea. It should be remembered, when considering the legal regime described below, that possible events at UNCLOS III and elsewhere may well alter the present law significantly. The reader is referred to Chapter Three in this regard, especially to the descriptions of RSNT proposals.

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11. This Act enabled the U.K. to ratify the Oslo and London Dumping Conventions (described above at p. 205 and p. 209). The Dumping at Sea Act is discussed at p. 382.

12. The Dumping at Sea Act 1974 is complemented by the Control of Pollution Act 1974 which, when the applicable provisions come into force, will regulate the disposal of materials in the sea by the use of pipe outfalls and similar devices. Discussion of the Control of Pollution Act 1974 is outside the scope of this investigation; however, a thorough analysis of that instrument is provided by McLoughlin, J. in "The Control of Pollution Act 1974," published in the *Journal of Planning and Environment Law* (1975), pp. 16-24, 77-85, 192-207.

13. The Petroleum and Submarine Pipelines Act, discussed below at p. 332.

B. Pollution From Seabed Operations

1. Continental Shelf Act 1964[14]

This Act was intended to provide for

> "the exploration and exploitation of the continental shelf; to enable effect to be given to certain provisions of the Convention on the High Seas done in Geneva on 29th April 1958; and for matters connected with those purposes."[15]

The Geneva Convention on the Continental Shelf provides that the coastal State exercises over her continental shelf "sovereign rights for the purpose of exploring it and exploiting its natural resources."[16] This Act incorporates into British law rights conferred by the Convention (or, possibly, customary law). Immediately following the enactment of this legislation Her Majesty's Government ratified the Convention which, in accordance with Article 11, came into force thirty days later.[17]

In the early part of the 1960's exploration of the southern part of the North Sea was beginning, stimulated by the discovery of the onshore Groningen gas field in the Netherlands in 1959.[18] As offshore

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14. 1964 Chapter 29, in force 15 April 1964.

15. Preamble to the Act.

16. Continental Shelf Convention, Article 2(1).

17. The Geneva Convention on the Continental Shelf was ratified by the U.K. on 11 May 1964 and came into force on 10 June of that year. Cmnd. 2422 (1964).

18. The first offshore wells in the North Sea were drilled off the coast of the Netherlands in the early 1960's, but intense exploration of the Danish, Norwegian, and U.K. continental shelves did not begin until the middle of the decade. White, I.L. (*et al.*), *North Sea Oil and Gas*, University of Oklahoma Press (1973), p. 3 and sources cited therein. See also Gaskell, T., "Oil and Gas in the North Sea," in Goldberg, E. (ed.), *North Sea Science*, NATO North Sea Science Conference, Aviemore (15-20

discoveries of gas occurred, North Sea States showed an increasing interest in obtaining sovereign rights over the natural resources of their continental shelves. Amidst speculation that hydrocarbon deposits might be located in that part of the continental shelf likely to become subject to U.K. sovereign rights, the U.K. negotiated delimitation agreements with her North Sea neighbours.[19] The prospect of offshore energy united Parliament in the common goal of enacting the Continental Shelf Act as quickly as possible to facilitate North Sea development.[20]

The Preamble also states that a purpose of the Act is to enable effect to be given to certain provisions of the 1958 Geneva Convention on the High Seas. The High Seas Convention provisions incorporated into British law by the Continental Shelf Act are closely connected with the development of offshore resources. The High Seas Convention imposes an obligation on States to draw up regulations to prevent marine pollution caused

> "by the discharge of oil from ships or pipelines or resulting from the exploitation and exploration

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November 1971), MIT Press, Cambridge, Mass. and London (1973), pp. 450-463. The first gas production from the U.K. sector occurred on 7 March 1967 from the West Sole Field. U.K. Department of Energy, *Continental Shelf Act Report for the year 1966-67*. The first oil was brought ashore from the U.K. sector by tanker from the Argyll Field in 1975. U.K. Department of Energy, *Development of the Oil and Gas Resources of the United Kingdom*, H.M.S.O. (1976), at p. 4.

19. Delimitation is discussed above at pp. 122 *et seq*.

20. *Hansard*, H.C. Vol. 688, col. 224, 28 January 1964. It is also noteworthy that the first criterion for licence issuance was stated by the responsible Minister to be "(t)he need to encourage the most rapid and thorough exploration and economical exploitation of petroleum resources on the Continental Shelf." *Hansard*, H.C. Vol. 692, col. 897, 7 April 1964.

of the seabed and its subsoil,"[21]

as well as requiring States to take measures to prevent pollution from radioactive wastes.[22] In 1971, the Continental Shelf Act was amended by the Prevention of Oil Pollution Act. The new Act repealed S. 5 of the Continental Shelf Act (which concerned the discharge of oil from pipelines or seabed operations), incorporating an amended version of that Section into its provisions. The Continental Shelf Act retains some incidental provisions relating to the control of marine pollution, but is now primarily important because it extends U.K. jurisdiction to the continental shelf. These jurisdictional provisions will be discussed immediately; the new provisions for the control of oil pollution from pipelines and seabed operations are discussed in the section relating to the Prevention of Oil Pollution Act.[23]

S. 1 of the Continental Shelf Act is broadly concerned with establishing in British law the rights specified by the Continental Shelf Convention. Thus, "any rights" which the U.K. may exercise in respect of the natural resources of the seabed outside territorial waters belong to Her Majesty.[24] Pertinent sections of the law regulating

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21. Geneva Convention on the High Seas, Article 24.

22. *Ibid.*, Article 25. As noted above in connection with the discussion of the High Seas Convention, the provisions contained therein purport to be declaratory of international customary law. Assuming this to be true, the U.K. would have been under a duty to regulate pollution of the sea by oil and radioactive wastes even before she ratified the High Seas Convention.

23. See below, p. 322.

24. Rights in relation to control are exercisable by the National Coal Board. S. 1(2). Other natural resources, such as gravel, are managed by the Crown Estate Commissioners pursuant to S. 1 of the Crown Estate Act 1961. (See, generally, Sibthorp, M., (ed.), *The North Sea: Challenge and Opportunity*, published for

licence issuance for petroleum exploration and production on land are extended to the U.K. continental shelf.[25] Licences for exploration or production in offshore areas have been issued pursuant to Regulations[26] by the Secretary of State for Energy.[27]

The rights conferred on licensees may be exercised only in zones described by Order in Council as "designated areas."[28] These now include virtually all of the U.K. North Sea continental shelf.[29]

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the David Davies Memorial Institute of International Studies by Europa Publications, Ltd., London (1975). Because rights claimed are not defined in the Act, should new rights in respect of the seabed accrue to the U.K. (for example, as a result of an agreement at UNCLOS III), on a textual interpretation of S. 1 such rights could be exercised under the provisions of the present Act.

25. Petroleum (Production) Act 1934 Ss. 2 and 6 relating "to the granting of licences to search and bore for, and get, petroleum" on land are expressly extended to the U.K. sector by S. 1(3) of the Act. This is an excellent illustration of Hardy's observation that regulations controlling offshore operations have evolved from terrestrial origins. See Hardy, M., "Offshore Development and Marine Pollution," 1 *Ocean Development and International Law* 239-273 (1973-74), at p. 251, and the discussion of the evolution of U.K. licensing policy in the section below examining the Petroleum (Production) Regulations 1976.

26. The Petroleum (Production) Regulations (1976 No. 1129).

27. S. 1(6). The Secretary of State is obligated to report to Parliament annually on licences granted and held, hydrocarbon production, and the formula used to compute licence fees. Ss. 1(5), (6). The Minister of Power was responsible for licence issuance under the Act, but several organisational changes have now vested that duty with the Secretary of State for Energy.

28. S. 1(7).

29. Conversations with Mr. J. Harvard, Department of Energy, 16 June 1976. At the end of 1976, designated areas were established by six Orders. See the Continental Shelf (Designation of Areas) Order (1964 No. 697), and the Continental Shelf (Designation of Additional Areas) Orders (1965 No. 1531), (1968 No. 891), (1971 No. 594), (1974 No. 1489), (1976 No. 1153). Some areas were designated by the U.K. before delimitation agreements with other North Sea States had been reached. Early designated areas were therefore those that were near to the U.K. so as to minimise

S. 2 of the Act provides that "safety zones" may be created by Orders in Council to protect installations[30] from risks posed by vessels.[31] This provision implements the right conferred by Article 5(3) of the Continental Shelf Convention. Pursuant to S. 2, Orders have been issued prohibiting ships from entering an area 500 metres from the outer edges of specified installations in designated areas without permission from the Secretary of State.[32] Unauthorised and unexempted entry into a prohibited zone subjects the owner or master to fine or imprisonment unless the accused can prove that the master neither knew of nor reasonably could have ascertained the existence

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possible conflict with Britain's North Sea neighbours. *Hansard*, H.L. Vol. 253, cols. 912-13, 3 December 1963. The effect of the Norwegian Trough was likewise unresolved in 1964, though it was the U.K. view that "the Norwegian Deep is not deep enough to preclude Norway from operating on the subsoil of the shallower waters beyond." Mr. John Peyton, the Parliamentary Secretary to the Ministry of Power, reported in *Hansard*, H.C. Vol. 688, col. 276, 28 January 1964.

30. "Installation" is not defined by the Act, but spokesman's comments during Parliamentary debate suggest that it should be given a wide interpretation: "In this Bill the term [installation] is used generically and includes such things as drilling platforms situated above the surface of the sea and connected to the sea-bed by legs, and also barges which are anchored to the sea-bed and from which drilling operations are carried out, either over the stern or through the barge bottom." *Hansard*, H.L. Vol. 253, col. 914, 3 December 1963. Article 5 of the Continental Shelf Convention refers to "installations or devices" which are "*on* the continental shelf" (paragraph 2, emphasis added), and provides safety zones for those "which have been erected" (paragraph 3). As S. 2 of the Act implements the right to establish safety zones around "installations" conferred by Article 5 of the Convention, there is little doubt that safety zones can only be established around "installations" that are stationary. On the other hand, U.K. jurisdiction extends to installations even when they are in transit.

31. S. 1 (7).

32. Safety zones are published in notices to mariners which are issued by the Admiralty. See Samuels, A., "The Continental

of the prohibited zone.[33]

The prohibition imposed by the Protection of Installations Orders is inconsistent with the rule of international customary law which provides that freedom of navigation is a freedom of the high seas.[34] However, freedom of navigation is not absolute; it must be balanced by a duty of reasonable usage.[35] Thus, in some cases the freedom to navigate on the high seas may be restricted. The legal basis for U.K. safety zones is Article 5(2) of the Continental Shelf Convention. Article 5(2) provides that the coastal State may establish safety zones around installations on its continental shelf and "take in those zones measures necessary for their protection." What "measures" may be taken is not specified though some regulation of navigation is clearly authorised, for Article 5(3) provides that "(s)hips of all nationalities must respect these safety zones."

Shelf Act 1964," in British Institute of International and Comparative Law, *Developments in the Law of the Sea 1958-1964*, London (1965), pp. 155-167, at p. 166. Exceptions are provided for repair of a submarine pipe or cable, provision of service to an installation or inspection of an installation under government authority, a lighthouse authority ship in connection with safety of navigation duties, movements to save life or property, intrusion because of weather or when in distress. These exceptions are enumerated in each Order at S. 2(1).

33. S. 2(2). The penalty on summary conviction is a maximum fine of £100 and/or imprisonment of up to three months; on indictment the fine is unlimited and the prison term may be up to one year.

34. High Seas Convention, Article 2(1).

35. *Ibid.*, Article 2: "These freedoms, and others which are recognised by the general principles of international law, shall be exercised by all States with reasonable regard to the interests of other States in their exercise of the freedom of the high seas.". See also Warbrick, C., "The Regulation of Navigation," in British Institute of International and Comparative Law, *New*

Although there have been a number of instances in which foreign vessels have violated U.K. safety zones,[36] as of mid 1976 there had been no disputes resulting from the U.K. prohibitions.[37] The absence of protest by other States is some evidence that the prohibition of traffic within 500 metres of installations is reasonable[38] and it may also suggest that the U.K. law has been accepted as international customary law. However, it must be remembered that caution is required when inferring the *opinio juris* element of customary law from an absence of protest. On the one hand it may well indicate a tacit acceptance that a new right which infringes on the freedom of the high sea has been created; however, as the majority of the P.C.I.J. in the *Lotus* case observed, it does not follow that because a State has refrained from acting in a certain way that it believes that it is legally bound to do so.[39] A cluster of rigs, especially in the more con-

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Directions in the Law of the Sea, Vol. III, London (1973), at pp. 137-154.

36. The number of breaches of U.K. safety zones has risen from 16 in 1971 to 50 in 1973. See Birnie, P., "The Legal Background to North Sea Oil and Gas Development," in Saeter, M. and Smart, I. (eds.), *The Political Implications of North Sea Oil and Gas*, Universitetsforlaget, Oslo and I.P.C. Science and Technology Press Ltd., Guildford (1975), pp. 19-50, at p. 42 in her footnote 17.

37. Conversation with Mr. K. Mayo, Department of Energy, 16 June 1976.

38. Some writers have suggested that a 500 metre zone, agreed upon before the advent of supertankers is, if anything, insufficient to safeguard against collision risk. Birnie, P. *op. cit.* in footnote 36, at p. 22. U.K. operators have asked H.M.G. to unilaterally extend safety zones to 1,000 metres. *The Scotsman*, 2 March 1977, p. 9. *Cf.* the Norwegian operators' view that safety zones should surround installation clusters, below, at p. 438.

39. *The Lotus*, P.C.I.J., Series A. No. 10 (1927). See "'Emerging' international customary law?" above at p. 96.

gested or strategically important sections of the North Sea, might well engender protest by foreign States as an unreasonable infringement of the traditional high seas freedoms.[40]

S. 3 of the Act applies U.K. criminal and civil law to designated areas.[41] Criminal law applies to acts or omissions,

> "on, under or above an installation in a designated area or any waters within five hundred metres of such an installation" and which could, if committed in any part of the U.K., "constitute an offence under the law in force in that part" of the U.K.[42]

This provision raises both international and British legal issues.

The international law question is whether the jurisdiction claimed exceeds that granted either by the Continental Shelf Convention

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40. By mid 1976 safety zones had been designated in respect of some 50 U.K. installations. Department of Energy, "Fact Sheet 2: Oil from the U.K. Continental Shelf," (July 1976), at p. 5.

41. S. 8 of the Mineral Workings (Offshore Installations) Act 1971. amends S. 3 of the Continental Shelf Act by extending its application to include territorial waters as well as designated areas.

42. Although S. 3(1) is not expressly limited to criminal law, the term "offence" suggests that it excludes civil grievances. This implication is supported by Parliamentary Debates. *Hansard*, H.L. Vol. 253, cols. 913-914, 3 December 1963. S. 3(2), discussed immediately below in the text, was intended to transfer the civil law, although it was recognised that some Acts (such as the Wireless Telegraphy Act and the Radioactive Substances Act) which are expressly extended by Order pursuant to S. 3(2) would indirectly concern criminal law. *Hansard*, Standing Committee A, 3rd sitting, col. 108, 26 February 1964. Enforcement of U.K. criminal law on installations is by the constable of the area which services the installation. S. 11(3) and administrative practice. The body of criminal law extended to installations is limited to that which has the "character of universality." Sibthorp, M. (ed.), *op. cit.* in footnote 24, at p. 168, footnote 66. This source also quotes Samuels as remarking that "it remains to be seen how far, if at all, the drinking and betting and gaming laws will be applied to installations as having comparable conditions and constituting a 'microcosm of the United Kingdom,'" Samuels, A., *op. cit.* in footnote 32, at p. 166. The most important problem with the extension of British law offshore is that of enforcement. The Aberdeen constable is responsible for activities on installations in the North Sea that are farther from Aberdeen than

or by international customary law. Two provisions of the Convention are relevant. Article 5(4) provides that installations and devices on the continental shelf are under the jurisdiction of the coastal State, but cautions that they are not islands and do not have a territorial sea. In the following paragraph, Article 5(5) requires that if abandoned or disused, installations must be entirely removed. Jurisdiction in the safety zone is therefore not based on territorial sovereignty, but is of a limited concessionary nature.[43] Does this jurisdiction allow the application of British criminal law to foreign vessels within the safety zone? What of application to foreign aircraft flying above an installation?

The right to interfere with a foreign flag vessel on the high seas is limited but can the safety zone be classified as high seas? The Continental Shelf Convention expressly authorises a functional zone, thus distinguishing it from the high seas. As in the question of prohibiting entry into the zone, application of coastal State criminal law in that area depends for its validity in international law (at least *vis a vis* Parties to the Continental Shelf Convention) on whether it is a *reasonable* exercise of the authorised zonal function. In the case of the U.K., the control of prosecutions by H.M.G. has ensured that British criminal law has been applied sparingly to foreign vessels.[44]

Aberdeen is from Dublin, yet transportation to such locations must be arranged on an *ad hoc* basis. Chief Constable Alexander Morrison of Aberdeen describes offshore police work in the special "Oil Register" supplement to *The Scotsman*, 28 January 1975.

43. Birnie, P., *op. cit.* in footnote 36, at. p. 21.

44. Although the Department of Trade has powers under S. 3 of the Act to control foreign flag vessels within the safety zone, so

A more difficult question is raised by the doctrine of hot pursuit. The High Seas Convention and international customary law authorise the pursuit of a foreign ship which has violated the laws of a coastal State. Hot pursuit may be commenced when the foreign vessel is in the internal waters, territorial sea, or contiguous zone[45] of the coastal State and may continue on the high seas so long as pursuit is not interrupted. The foreign vessel may be arrested, but any action by the coastal State must be proportional to the offence alleged, and in the event that interference is unjustified or disproportional, compensation must be paid.[46]

Is there a right of hot pursuit from installation safety zones? This question has not arisen in practice, so there is little from which to infer the existence of customary law.[47] Perhaps the strongest argument for the view that there is a right of hot pursuit from

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far regulations have been agreed on a voluntary basis. Archer, J., "Government Responsibilities for Maritime Safety," 19 *Trade and Industry* 130-134, at p. 134 (18 April 1975). The Department of Trade objection to inadequate and substandard crews on some supply vessels flying foreign flags has not been resolved by such agreement. Conversation with Dr. J. Cowley, 11 June 1976. Agreement was sought because although U.K. jurisdiction is made possible by the entry of supply vessels into British ports, there is no applicable British law. *Ibid.*

45. Hot pursuit from the contiguous zone can only occur for offences related to purposes for which that zone was established, that is, customs, fiscal, immigration or sanitary regulations. Territorial Sea Convention, Article 24(1). The U.K. does not claim a contiguous zone and has opposed a right of pursuit for acts committed therein, although accepting that violations in the territorial sea or internal waters justify commencement of pursuit from the contiguous zone. Brownlie, I., *op. cit.* in footnote 1, at p. 246, and sources cited therein.

46. High Seas Convention, Article 23; the *I'm Alone*, 2 *U.S. Department of State Arbitration Series* 1-7 (1931-1935).

47. Conversation with Mr. K. Mayo, Department of Energy, 16 June

the safety zone to the high seas is that such a right must be implied from the very nature of the zone.[48] It is improbable that an intruder will linger within the zone if he believes that arrest is imminent. However, if a customary law right of hot pursuit from installation safety zones has developed, it must be consistent with the reasonable use requirement which attempts to accommodate competitive activities. The safety zone, like the contiguous zone, is predicated upon function. It is suggested that an implied right of hot pursuit from safety zones is limited to the objective of ensuring installation safety or safeguarding the coastal State's sovereign rights over the seabed.

It will be remembered that Article 3(1) of the Act also purports to extend national criminal laws to foreign aircraft *above* an installation. This is a claim *ultra vires* the express provisions of the Continental Shelf Convention. Can it, however, be implied or found in customary law?

It is arguable that a right to control aircraft over an installation is implied in the Continental Shelf Convention. In the *Reparations for Injuries Case*, the I.C.J. found that the right to claim for damages caused to an employee of the United Nations, though

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1976. The right of hot pursuit may be exercised only by warships, military aircraft, or ships and aircraft on Government services specially authorised to that effect. High Seas Convention, Article 23(4). Thus, a supply vessel would be prohibited from pursuing an offender, and H.M.G. should ensure that any type of "protection vessel" has the requisite authorisation.

48. A U.S. District Court found that international customary law authorises hot pursuit from a fisheries zone. Fidell, E., "Hot Pursuit from a Fisheries Zone," 70 *American Journal of International Law* 95-101 (1976), commenting on *U.S. v. Fishing Vessel Taiyo Maru No. 28; U.S. v. Kawaguchi* [395 *F. Supp.* 413 (D. Me. 1975)]. Another writer suggested that the case merely made explicit a right which was implicit in customary law. Ciobanu, D., "Hot Pursuit from a Fisheries Zone: A Further Comment," *Ibid.*, at pp. 549-553.

not expressly provided for in the Charter, was conferred upon the organisation by necessary implication because such power was essential to the performance of U.N. duties.[49]

In the case of installations, the coastal State is given jurisdiction to control activities actually on the installations. Activities immediately over an installation, as by a hovering helicopter, quite clearly could seriously interfere with coastal State jurisdiction and control. On the other hand, a reconnaissance flight or satellite at a height of several miles would not be likely to conflict with activities on the installation. It may be, then, that under the customary law criterion of reasonable use, the coastal State is entitled to the jurisdiction necessary to reasonably exercise its sovereign rights over the natural resources of the continental shelf, and this includes the regulation of low-flying aircraft.

The second issue concerns possible multiple prosecutions under U.K. law. S. 3(1) must be read with S. 11(1) which provides that prosecutions of offences committed under S. 3(1)

> "may be taken, and the offence may for all incidental purposes be treated as having been committed, in any place in the United Kingdom."

The effect of these two provisions is that an offender may be prosecuted in any court in the U.K.--and possibly by two or more courts where the act or omission complained of are peculiar to each jurisdiction. An accused could conceivably be required to defend himself before courts in England, Scotland, and Northern Ireland.[50] This

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49. *Reparations for Injuries Suffered in the Service of the United Nations, I.C.J. Reports* (1949), p. 174.

50. Prof. Lauterpacht has noted that it would also "be possible to

provision, though potentially onerous, is not unique.[51] H.M.G.'s position was that the wide criminal jurisdiction thus provided for would be closely controlled to preclude vexatious prosecution.

Civil jurisdiction concerning offshore operations activities is extended to territorial waters and designated areas by an Order in Council effecting extraterritorial extension.[52] Pursuant to this section, an Order has divided the designated areas into English, Scottish and Northern Irish sections.[53] The *locus* of the act complained

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prosecute in Scotland for any offence against Scots law a person committing on an installation off the coast of Cornwall an act which was not an offence under English law." Lauterpacht, E., (ed.), *British Practice in International Law* (1964), pp. 55-56; cited by Sibthorp, M., (ed.), *op. cit.* in footnote 24, at p. 168, footnote 67. Mr. Samuels (*op. cit.* at footnote 32) disagrees with this interpretation.

51. As Mr. John Peyton, the Parliamentary Secretary to the Minister of Power, explained to the House of Commons, "(t)he fact that a person may thus be exposed to criminal proceedings in two countries is not of itself novel. This is the position under the Merchant Shipping Acts, and careful examination of the experience under those Acts has not led the Government to believe that there is any need to have second thoughts about what we are doing here." *Hansard*, H.C. Vol. 692, col. 884, 7 April 1964.

52. S. 3(2). As with criminal jurisdiction, S. 8 of the Mineral Workings (Offshore Installations) Act amends the civil law extension of the Continental Shelf Act to add territorial waters to the designated areas specified in S. 3 of the Act. The limitation of civil jurisdiction to matters of seabed operations leaves the question of civil jurisdiction in respect of other occurrences open, for example, slander spoken on an installation. Sibthorp, M. (ed.), *op. cit.* in footnote 24, at p. 169, footnote 69.

53. The Continental Shelf (Jurisdiction) Order (1968 No. 892). The Continental Shelf (Jurisdiction) (Amendment) Orders (1971 No. 721) and (1974 No. 1490) extend civil jurisdiction to newly designated areas. The 1968 Jurisdiction Order has been suggested by some as delimiting a "Scottish sector" over which an independent Scotland could exercise sovereign rights. This suggestion conflicts with the principles of continental shelf delimitation between adjacent States as declared by the I.C.J. in the *North Sea Continental Shelf Cases. I.C.J. Reports* 1969. See the article

of determines which of these courts has exclusive jurisdiction. Jurisdiction is exclusive for civil litigation because the Government cannot exercise the control over litigation that they can in cases of criminal prosecutions. It was decided that only one court should have jurisdiction to prevent possible multiple litigation which could require a defendant to appear in various parts of the U.K., perhaps in connection with the same action.[54]

Several Acts are expressly extended to designated areas by provisions of the Continental Shelf Act. Thus, Part II of the Coast Protection Act which requires Department of Trade consent before any work which is likely to cause an obstruction or danger to navigation may be commenced now applies to the continental shelf.[55] Pursuant to this provision, the Government has express control over the siting of installations and devices, and it can control the location of obstructions to shipping lanes.[56]

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by Hugh Stevenson in *The Times*, 1 March 1976, at p. 17 and the letter of John Grant to *The Times*, 3 March 1976, at p. 18 commenting on the article. Both the Court and the Continental Shelf Convention (in Article 6) accord priority to agreement between the interested States and then suggest other methods of delimitation--none of which is a pre-existing internal instrument of one of the parties.

54. "We have therefore done our best to ensure that a person would be prosecuted in only one country. We are satisfied that criminal proceedings would not be taken in both countries, but where civil proceedings are concerned, where there might be a multitude of plaintiffs, it would be very undesirable that the wretched defendant should be pursued in two countries at the same time and where .... there might be two different results." *Hansard*, Standing Committee A, 3rd sitting, col. 107, 26 February 1964.

55. 12 & 13 Geo. 6 Ch. 74; Continental Shelf Act, S. 4.

56. *Hansard*, H.L. Vol. 253, col. 914, 3 December 1963. Extension of the Coast Protection Act in practice "means that consent must be obtained for each drilling operation and for all offshore

The Wireless Telegraphy Act was extended by the Continental Shelf Act at the urging of the Post Office. In summary, it authorises the Postmaster General to control the use of wireless telegraphy on or near installations.[57]

S. 7, authorising application of the Radioactive Substances Act 1960 to the continental shelf by Order was included to comply with the obligation imposed by Article 25 of the High Seas Convention. Use of radioactive substances on the continental shelf

> "is likely when someone seeking to explore what is under the Shelf lowers a sealed neutron. The radioactive rays sent out from the neutron will be reflected in such a way as to reveal the qualities of the surrounding strata."[58]

S. 7 gives H.M.G. control over such activities.

S. 8(1) extends those parts of the Submarine Telegraph Act 1885 pertaining to punishment for cable damage and compensation for gear sacrificed to avoid such damage to all submarine cables under the high seas, and to pipelines as well.[59] This provision might be challenged

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production facilities." Offshore operators are warned that proposals to drill within "clearways" (see Figure II-3, p. 42) are subject to protracted approval proceedings. Continental Shelf Operations Notice No. 18, March 1973. Operations Notices are published by the Department of Energy to advise offshore operators on matters of U.K. law and policy. The Coast Protection Act now provides H.M.G. with authority to control the laying of buoys, an activity which has been the basis for fishermen's complaints that such objects constituted unreasonable interference with fishing. Banel, R., "North Sea Hazard Warning System," *The Scotsman*, "Oil Register" supplement, 26 January 1976.

57. *Hansard*, H.L. Vol. 253, col. 915, 3 December 1963; H.C. Vol. 692, col. 885, 7 April 1964.

58. *Hansard*, Standing Committee A, 4th sitting, col. 145, 4 March 1964.

59. The Continental Shelf (Jurisdiction) Order (1968 No. 892) extends both the Wireless Telegraphy Act 1949 and the Radioactive Sub-

by a defendant prosecuted pursuant to it. U.K. criminal jurisdiction to prosecute in respect of telegraph cables is based on S. 27 of the High Seas Convention and expansion of the enabling Act beyond the scope of the Convention could be questioned. S. 8 is so broadly drafted that it would authorise U.K. prosecution of a foreign national for damage to a foreign pipeline, so long as the pipe rests on the U.K. continental shelf. However, Article 24 of the High Seas Convention requires all States to draw up regulations to prevent oil pollution from pipelines. The argument that S. 8(1) is merely a reasonable fulfillment of this duty is persuasive.

The remaining provisions deal with incidental matters of little relevance to the control of marine pollution.[60]

In conclusion, it may be said that the Continental Shelf Act 1964 is an effective instrument for the extension of U.K. law beyond her territory. Although certain provisions may be criticised as perhaps exceeding their basis in international law, in practice H.M.G. has acted in accordance with present global norms. Moreover, as there is a clear trend to expanded coastal State jurisdiction in State practice and as evidenced by UNCLOS III negotiations, the Continental Shelf Act appears destined to remain uncontroversial.

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stances Act 1960 to designated areas. The Petroleum and Submarine Pipelines Act extends the application of Continental Shelf Act S. 8(1) to pipelines in U.K. territorial waters, pursuant to S. 45(1).

60. S. 9 concerns the use and supply of natural gas, S. 10 concerns the modification of national insurance acts, S. 12 refers to the powers of the Parliament of Northern Ireland to make laws. Ss. 9 and 10 have been substantially modified by subsequent legislation; S. 12 was repealed in 1973.

2. Petroleum (Production) Regulations 1976[61]

These Regulations contain the licensing system that is the primary instrument controlling the exploration and exploitation of the U.K. continental shelf. They were issued by the Minister of Power[62] under the authority of the Petroleum (Production) Act of 1934[63] and the Continental Shelf Act 1964.

The Regulations consist of a short body of 12 sections, plus appended Schedules containing Model Clauses for various types of licences.[64] The paragraphs below set out the general provisions of the Regulations followed by a brief exposition of relevant sections of Schedules Five ("Model Clauses for Production Licences in Seaward Areas") and Seven ("Model Clauses for Exploration Licences in Seaward Areas or in Landward Areas Below the Low Water Line").[65]

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61. (1976 No. 1129), effective 20 August 1976. The 1976 Regulations (as they shall be designated herein) consolidate the Petroleum (Production) Regulations 1966 (as amended) and complete the revocation of the Petroleum (Production) Regulations 1935 (as amended). Schedule 2 of the 1976 Regulations sets out the Regulations ceasing to have effect. It should be pointed out that the 1966 Regulations (as amended) had replaced the Petroleum (Production) (Continental Shelf and Territorial Sea) Regulations (1964 No. 708).

62. Now the Secretary of State for Energy.

63. 24 & 25 Geo. 5.c. 36, S. 6.

64. Other Schedules containing Model Clauses for licences include 4 ("Model Clauses for Production Licences in Landward Areas"), 6 ("Model Clauses for Exploration Licences in Landward Areas Above the Low Water Line"), and 8 ("Model Clauses for Methane Drainage Licences"). Schedule 1 is "Lines Dividing Landward Areas from Seaward Areas," and Schedule 3 is "Form of Application for a Production Licence or an Exploration Licence."

65. Regulations 10(2)(b), (d).

Licences are necessary to either produce or explore for oil in "seaward areas" of the U.K.[66] Any person may apply for either type of licence and, under the 1976 Regulations, it is not necessary that the applicant be a U.K. resident citizen or an enterprise incorporated in the U.K.[67] (This was required under the 1966 Regulations, however, and many foreign companies have incorporated U.K. subsidiaries which have become licensees.)[68]

Production licences confer upon the holder exclusive rights to explore for and produce petroleum[69] in the licensed area for four years.[70] Thereafter, one-third of the sections awarded may be retained for an additional 30 years, the remainder reverting to Her Majesty.[71] Production licences are awarded following invited bids[72] for blocks[73]

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66. These are areas seaward of the low water line or straight baselines. Schedule 1 lists U.K. straight baselines.

67. Regulations, Section 4.

68. About one-third of the licensees are native British companies. Department of Energy, *op. cit.* in footnote 40, at p. 8.

69. Petroleum includes any mineral oil or relative hydrocarbons and natural gas. Schedule 5, Model Clause 1.

70. Schedule 5, Model Clauses 2 and 3. The original licensed area may be extended for an additional 3 years. As of mid 1976, approximately 16 per cent. of the U.K. continental shelf had been licensed pursuant to 33 licences issued to more than 240 licensees. Department of Energy, *op. cit.* in footnote 40, at p. 8.

71. Schedule 5, Model Clauses 4 and 5.

72. Except where the applicant is the BNOC or a subsidiary company, or does or did hold a production licence in respect of the area, a production licence may only be issued in response to invited bids for specific blocks. Regulations, Section 7.

73. Blocks measure 200-250 square kilometres (80-100 square miles). Scottish Office, *Brief on North Sea Oil*, p. 35 (1974).

within designated areas. The amount of a bid was subordinate to other factors in early licensing rounds, the most important consideration being the promise of rapid development.[74] However, in the fourth round of licensing in 1971-72 the size of the bonus offered in a bid became a factor to be formally considered.[75]

Exploration licences are not exclusive, but may be for the whole or any part of seaward areas.[76] The right to explore for petroleum is granted for three years, subject to any existing production licence rights.[77]

Several provisions of Schedules Five and Seven are directly

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74. In 1964, the Parliamentary Secretary to the Minister of Power noted six criteria for licence issuance--none of which was financial:
    1. "The need to encourage the most rapid and thorough exploration and economical exploitation of petroleum resources on the Continental Shelf.
    2. The requirement that the applicant for a licence shall be incorporated in the United Kingdom and that the profits of the operations shall be taxable here.
    3. Where the applicant is a foreign-owned concern, how far British oil companies receive equitable treatment in that country.
    4. The programme of work of the applicant and also the ability and resources to implement it.
    5. The contribution the applicant has already made or is making towards the development of resources of our Continental Shelf and the development of our fuel economy generally."
    6. The requirements of national security were also considered.

    Hansard, H.C. Vol. 692, col. 897, 7 April 1964.

75. Scottish Office, *loc. cit.* in footnote 73; White, I.L. (*et al.*), *op. cit.* in footnote 18, at p. 27 and sources cited therein. Awards from the fifth round of licensing announced 9 February 1977 indicate that State participation is now a significant factor. Amoco, which has resisted H.M.G. in this respect was not numbered among the 24 new licensees. *The Times*, 10 February 1977, p. 19; *The Scotsman*, 10 February 1977, p. 1.

76. Regulations, Section 8(1)(a); Schedule 7, Model Clause 2.

77. Schedule 7, Model Clauses 2, 4. The licence may be extended for an additional 3 years at Ministerial discretion.

relevant to the control of marine pollution from offshore operations. No production or exploration well may be started, abandoned or re-started without the written consent of the Secretary of State.[78] The Government can therefore control the location of wells even if navigational considerations are not involved.[79] The Secretary of State is also empowered to order an examination of wells and relevant records where a condition in the licence relates to the position, depth or direction of the well, or its casing.[80] A similar examination may be ordered in respect of an abandoned well which was drilled under a licence containing a condition pertaining to plugging or sealing.[81] Plugging of wells must be done in accordance with a specification approved by the Secretary of State and effected in "an efficient and workmanlike manner."[82] In the event that a production well is located in an area for which the licensee no longer exercises rights, if not sealed it shall be left in good order and fit for further working.[83] Such remaining fixtures become the property of

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78. Schedule 5, Model Clause 17(1), (2). Model Clause 19 imposes a similar condition of Ministerial consent on a Licensee wishing to suspend work on the drilling of a development well. Schedule 7, Model Clause 7(1), (2).

79. *Cf.* Article 4 of the Continental Shelf Act which extends Part II of the Coast Protection Act to installations on the Continental Shelf and which concerns likely obstructions to navigation. Under the Model Clause, the Secretary of State could take action to avoid other dangers (such as drilling in unstable geological formations) or to avoid conflict with other users not primarily interested in navigation (such as fishermen).

80. Schedule 5, Model Clause 17(4); Schedule 7, Model Clause 7(4).

81. *Ibid.*

82. Schedule 5, Model Clause 17(5); Schedule 7, Model Clause 7(7).

83. Schedule 5, Model Clause 17(6).

the Secretary of State.[84] The above provisions regulating oilwell fixtures empower the Secretary of State to control quite closely the manner in which drilling and other offshore activities may be conducted. The express powers contained in Model Clauses are possibly incomplete, however, in that they do not require the removal of abandoned or disused installations as required by the Continental Shelf Convention.[85] Despite this omission, there is little doubt that such removal *could* be required under the Coast Protection Act as applied by the Continental Shelf Act.[86] But as the *Government* is under no legal duty to require installation removal in appropriate cases, and in fact does not do so,[87] in this respect U.K. legislation

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84. *Ibid.*, 17(7).

85. Article 5(5). See Birnie, P., *op. cit.* in footnote 36, at p. 29.

86. A recent investigation of obstacles to navigation on the U.K. continental shelf revealed that there was no central body to collate and publicise details of structures placed on the continental shelf. In consequence, mariners were unaware of many obstacles to navigation. It was recommended "that existing statutory requirements should be enforced to ensure the notification of the establishment, movement or abandonment of structures on the sea bed of the U.K. Continental Shelf. There should be substantial penalties for non-compliance. We also recommend that a review should be undertaken of the adequacy of existing legislation and that the Royal Navy should be given the responsibility for inspection and enforcement." *Report from the Select Committee on Science and Technology*, Offshore Engineering, Session 1974, H.M.S.O. (1974).

87. Continental Shelf Operations Notice No. 11 (Addendum), November 1975, is instructive: "In view of the great draught of some modern vessels and the increasing oil exploration and development operations in UK waters, the Department of Trade (Marine Division) may in the future consider it necessary to restrict the height above seabed level of suspended wellheads in certain areas of heavy shipping activity. To prevent obstruction or danger to navigation, Marine Division when consenting to proposals to drill in water depths of 25 fathoms (45 metres) or less, may impose a restrictive condition to the effect that in any

and practice falls short of the obligations imposed by Article 5(5) of the Convention on the Continental Shelf.

In addition to requirements specified more or less precisely in the Model Clauses, there is a general requirement that the holder of a production licence must

> "use methods and practice customarily used in good oilfield practice for confining the petroleum obtained from the licensed area in tanks, gasholders, pipes, pipelines or other receptacles constructed for that purpose."[88]

"Good oilfield practice" is a standard that was established by many States as an attempt to control offshore activity for which there was no precedent in their law. The approach offers the advantage of flexibility so that initial standards may be predicated upon experience accumulated from exploration and production on land, but then can be modified as offshore technology and practice develop. On the other hand, it is questionable whether the industry sought to be regulated should set its own standards.[89] For this reason the "good oilfield practice" criterion of performance is generally being replaced by legislation based upon what experience has shown is possible or practicable. In the U.K., industry standards are complemented by law, but they remain important in several areas, such as determining "practicable" operational discharges.[90]

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subsequent suspension, the wellhead shall not protrude more than 2 metres above seabed level."

88. Schedule 5, Model Clause 20.

89. Mr. Warbrick made this observation in connection with the role of insurance underwriters in influencing vessel safety standards. See Warbrick, C., *op. cit.* in footnote 35, at p. 149.

90. See the discussion of the Prevention of Oil Pollution Act 1971, below at p. 322.

The "good oilfield practice" standard is defined by the *Code of Safe Practice for Drilling and Production in Marine Areas*, compiled by the Institute of Petroleum.[91] In pertinent part it provides that

> "(n)o crude oil, waste oil, oil sludge, oil water emulsion, or oil-bearing mixtures should be discharged or allowed to flow into any stream, lake, or open sea."[92]

The industry standard purports, therefore, to prohibit the release of *any* oil from installations, no matter of what concentration. As will be seen, this is precisely the approach embodied in the Prevention of Oil Pollution Act 1971.[93]

The obligation to work in accordance with good oilfield practice is further elaborated by Model Clauses which require the licensee to take all steps practicable in order

> "(a) to control the flow and to prevent the escape or waste of petroleum discovered in or obtained form the licensed area;
>
> (b) to conserve the licensed area for productive operations;
>
> (c) to prevent damage to adjoining petroleum bearing strata;
>
> (d) to prevent the entrance of water through wells to petroleum bearing strata except for the purposes of secondary recovery; and
>
> (e) to prevent the escape of petroleum into any waters in or in the vicinity of the licensed area."[94]

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91. Institute of Petroleum, *Code of Safe Practice for Drilling and Production in Marine Areas*, Applied Science Publishers Ltd., Essex (1972).

92. *Ibid.*, S. 2.12.

93. See below, p. 322. As both the petroleum industry and H.M.G. are aware that perfect separation of oil from production waters is presently impossible, it is not surprising that an exception is made for the discharge of this oily effluent.

94. Schedule 5, Model Clause 21(1); Schedule 7, Model Clause 9(1).

The Secretary of State may issue instructions regarding any of these obligations and, should the licensee object that an instruction is unreasonable, he has recourse to arbitration.[95] If an escape or waste of petroleum does occur, a production licensee must notify the Secretary of State "forthwith" and if the escape of petroleum is into the sea,[96] the licensee must "forthwith" notify the Chief Inspector of the Coastguard as well.[97] Unlike similar sections in the Prevention of Oil Pollution Act,[98] the period within which the Secretary of State must be notified begins from the occurrence of the event, not the licensee's discovery of it. It would therefore be possible for the licensee unknowingly to violate his obligation to give notice of an escape or waste.

Both production and exploration licences contain Model Clauses which implement S. 5(1) of the Continental Shelf Convention. In the case of production licences, it is provided that

> "(t)he Licensee shall not carry out any operations authorised by this licence in or about the licensed area in such manner as to interfere unjustifiably with

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95. Schedule 5, Model Clause 21(2); Schedule 7, Model Clause 9(2). Arbitration provisions are found in Model Clauses 41 and 22, respectively.

96. Rather than into adjacent strata.

97. Schedule 5, Model Clause 21(8). The duty to report is clarified by Continental Shelf Operations Notice No. 7, of June 1972, which explains that "(a)ll escapes of petroleum should be reported to HM Coastguard as speedily as possible and in any event within 24 hours of being detected .... (f)ormal notice to the Secretary of State within three days does of course continue to be required." No incidents involving Model Clause 21(8) had occurred as of mid 1976. Conversation with Mr. M. Davey, Department of Energy, 16 June 1976.

98. Prevention of Oil Pollution Act, Ss. 6 and 7.

navigation or fishing in the waters of the licensed area or with the conservation of the living resources of the sea."[99]

The provision for exploration licences is similar: both faithfully follow the wording of the Convention and only prohibit operations that "unjustifiably" interfere with the other specified uses of the sea.

Enforcement of licence terms is effected primarily by requiring reports from the licensee of his activities. Thus, the licensee must record in the form prescribed by the Secretary of State, any drilling, deepening, plugging or abandonment of wells.[100] The Secretary of State or his representative may inspect and copy any records which the licensee is required to keep.[101] The licensee is also obligated to furnish at reasonable times information and reasonable assistance necessary for inspection,[102] and must admit the inspector to the premises.[103]

In the event that the licensee fails to comply with any of several enumerated Model Clauses,[104] the Secretary of State may, after reasonable notice, execute any works necessary to satisfy the

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99. Schedule 5, Model Clause 23. A substantially similar provision applies to exploration licences. Schedule 7, Model Clause 10.

100. Schedule 5, Model Clause 29. The Clause contains other reporting requirements as well. Schedule 7, Model Clause 12 is the identical provision applying to exploration licences.

101. Schedule 5, Model Clause 33(a); Schedule 7, Model Clause 16.

102. Schedule 5, Model Clause 33(b). There is no such duty imposed on the holder of an exploration licence.

103. Schedule 5. Model Clause 34; Schedule 7, Model Clause 17.

104. Schedule 5, Model Clause 35. Those relevant to pollution control are Model Clauses 17 (Commencement and abandonment and plugging of wells), 20 (Provision of storage tanks, pipes,

obligations imposed by that Model Clause at the licensee's expense.[105] The Secretary of State may take the further step of licence revocation for, *inter alia*,[106]

> "any breach or non-observance by the Licensee of any of the terms and conditions of this Licence."[107]

The present Government has recently stated that a case of massive pollution would be cause for licence revocation.[108] The brief experience to date has been good. There have been no incidents of "significant" pollution[109] and no licences have been revoked.[110]

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pipelines or other receptacles), and 21 (Avoidance of harmful methods of working). Schedule 7, Model Clause 18 provides a slightly differing version of this power to execute works at the licensee's expense for holders of exploration licences.

105. There had been no instances of works executed by the Secretary of State at the expense of the licensee as of mid 1976. Conversation with Mr. M. Davey, 16 June 1976.

106. Schedule 5, Model Clause 40(2), subsections (a) to (i) specify events upon which revocation can be based. A slightly differing list in respect of exploration licences is found in Schedule 7, Model Clause 21(2), subsections (a) through (f).

107. Schedule 5, Model Clause 40(2), at subsection (b) for both types of licence.

108. Statement by Lord Balogh, Minister of State, Department of Energy, and special oil advisor to Mr. Benn, the Secretary of State for Energy. *Hansard*, H.L. Vol. 364, cols. 924-925, 15 October 1975. Lord Balogh has since resigned as a Minister, but remains a special advisor and has been appointed to the board of the British National Oil Corporation created by Part I of the Petroleum and Submarine Pipelines Act. *The Scotsman*, 9 December 1975, p. 6.

109. Royal Commission on Environmental Pollution, *Fourth Report*, Cmnd. 5780 (1974), para. 125, at p. 44. However, a sprinkling of solid lumps of oil up to 20 cm. in diameter was found on the beach near Brora and is thought to have come from drilling 14 miles off the Scottish coast in that area. 8 *Marine Pollution Bulletin* 29-30 (February 1977).

110. Conversation with Mr. W. MacLeod, Department of Energy, 16 June 1976.

Despite the apparently good record to date, it is pertinent to ask whether existing requirements imposed upon exploration and production licensees by their licences will be adequate in the future as the level of offshore activity increases. As concluded in a recent U.K. environmental report, the primary sources of potential oil pollution from offshore operations are from well blowouts, storage tank rupture, pipeline fracture, or from an oil tanker.[111] To this list must be added pollution from substances other than oil, primarily from dumping of wastes associated with offshore operations. As will be seen from the analysis of the Prevention of Oil Pollution Act (immediately below), although that Act prohibits the discharge of any oil into the sea from installations, it does not set standards. The Mineral Workings (Offshore Installations) Act sets standards, but they are primarily concerned with safety and only indirectly control potential pollution from installations. It is therefore evident that "good oilfield practice" retains considerable importance as a practical guide to pollution avoidance procedures. Establishment of such procedures by the regulated industries may not in itself be undesirable. H.M.G. retains criminal sanctions to coerce compliance with standards which should also be established by Government.[112] Delegation of responsibility for marine pollution control in such circum-

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111. Royal Commission on Environmental Pollution, *op. cit.* in footnote 109, para. 129, at p. 45.

112. Under the Prevention of Oil Pollution Act 1971 and the Petroleum and Submarine Pipelines Act Her Majesty's Government can impose penalties in varying degrees, thus providing flexibility not present when the only sanction is licence revocation.

stances should not be confused with abdication of responsibility. The relevant law is shaped in large part by technology, and what more qualified organisations to pursue the technology of marine pollution control are there than the corporate petroleum giants? One possible scheme would be for Government to set standards (based on empirical evidence of what protection is necessary, economically feasible, etc.) and then let contracts for the technology by competitive bid open to both the public and private sector. Such a system could offer both price and technology competition.

3. Mineral Workings (Offshore Installations) Act 1971[113]

The preamble of the Mineral Workings Act indicates that it is addressed to three aspects of safety in offshore operations:[114]

1. "(T)he safety, health and welfare of persons on installations[115] concerned with the underwater

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113. 1971 Chapter 61, in force 1 May 1972, except for Ss. 4 and 5 which became effective 31 August 1972. The Mineral Workings (Offshore Installations) Act 1971 (Commencement) Order (1972 No. 644).

114. Paragraphing added. The impetus for the Mineral Workings Act was provided by the collapse of the drilling rig "Sea Gem" with considerable loss of life. *Hansard*, H.L. Vol. 315, cols. 741-42, 18 February 1971. An inquiry into the disaster resulted in a Report which made several recommendations. The Act incorporates nearly all of these suggestions, "particularly those about construction and operating techniques, facilities and codes of construction which vary enormously from one type to another, discipline and the chain of command." *Hansard*, H.C. Vol. 816, col. 651, 28 April 1971. See also, "Report of the Inquiry into the Causes of the Accident to the Drilling Rig 'Sea-Gem'; 1966-67," Cmnd. 3409 (October, 1967).

115. "Offshore installation" means an installation used or intended for underwater exploitation or exploration. S. 1(3)(b). This definition includes installations capable of being manned, but regulations can also apply to unmanned devices, for example (1972 No. 702), (1973 No. 1842). S. 12(2); *Hansard*, H.C. Vol. 821, col. 674, 14 July 1971. S. 44(3) of the Petroleum and Submarine Pipelines Act 1975 amends S. 12(3) of this Act by

exploitation[116] and exploration[117] of mineral resources in the waters in or surrounding the United Kingdom, and

2. (G)enerally for the safety of such installations,

3. (T)he prevention of accidents on or near them."

Because this Act seeks to control accidents associated with offshore operations, it is also relevant to control of marine pollution resulting from such mishaps.

The essence of this Act is the authority conferred upon the Secretary of State for Energy to make safety regulations governing U.K. offshore installations, together with the imposition of statutory responsibility placed upon "installation managers."[118] The Act is drafted in general terms; great reliance is placed upon subordinate Regulations to implement the details thought necessary for safe offshore operations.[119] The Act will be generally outlined in the

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including a pipeline and associated works within the definition of "installation," if capable of being manned.

116. "'(U)nderwater exploitation' or 'underwater exploration' means exploitation or exploration from or by means of any floating or other installation which is maintained in the water, or on the foreshore or other land intermittently covered with water, and is not connected with dry land by a permanent structure providing access at all times and for all purposes." S. 1(3).

117. "'(E)xploration' means exploration with a view to exploitation." S. 1(3)(a).

118. This implements one of the principal recommendations of the "Sea Gem Report." A most significant finding of the investigation was that confusion existed among Sea Gem workers as to who was in charge when the rig was being prepared for towing and therefore neither drilling nor in transit. See *Hansard*, H.C. Vol. 816, cols. 648-49, 24 April 1971.

119. The Act is intended to supplement the safety provisions inserted into licences which formerly were the sole means of safety regulation. A statutory scheme of safety regulations was thought necessary because appropriate penalties for

paragraphs below, with more emphasis placed upon those provisions likely to affect the control of marine pollution.

The Act applies to the underwater exploitation and exploration of mineral resources[120] in U.K. waters[121] and covers all types of installations,[122] including those which are also subject to the

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different levels of violation (instead of only licence revocation) could be imposed, because standards could more easily be made uniform, and because an overall safety scheme could be presented more clearly. *Hansard*, H.L. Vol. 315, cols. 742-43, 18 February 1971. The form of this instrument reflects the desire of the Government for flexibility: "(R)egulations should be made by Order, because with this rapidly changing industry, and its advancing techniques and technology, it will be necessary to bring in new regulations and to change them frequently in response to development." Mr. N. Ridley, Under-Secretary of State for Trade and Industry, in *Hansard*, H.C. Vol. 816, col. 648, 28 April 1971. Regulations in preparation include provision of life-saving appliances, fire-fighting systems and equipment and emergency procedures, and the holding of regular drills and practice musters. Department of Energy, *op. cit.* in footnote 40, at p. 6.

120. The Act is not limited to oil drilling, but includes any offshore workings, for example gravel, potash. *Hansard* H.L. Vol. 315, col. 1276, 2 March 1971.

121. Both territorial waters and "designated areas" are subject to this Act, but, without an Order yet to be made, "inland waters" are not. S. 1(1)(a), (b); 1(2)(a). "Designated areas" has the same meaning as that given by S. 1(7) of the Continental Shelf Act 1964. S. 1(2)(a). "Inland waters" are those "within the United Kingdom, other than estuaries and tidal rivers." S. 1(2)(b). Unlike many Acts which apply to U.K. registered vessels wherever they may be, this Act only applies to rigs on the U.K. Continental Shelf. *Hansard*, H.C. Vol. 816, col. 648, 28 April 1971.

122. This includes "production platforms and exploration rigs, fixed rigs with fixed legs, floating rigs, and .... installations which as yet have not been designed or made which would explore for other minerals on the seabed .... ." *Hansard*, H.C. Vol. 816, col. 648, 28 April 1971. Any "installation or device" capable of being manned must be registered; for example, certain types of buoys. Any such "installation or device" has a 500 metre safety zone; as of mid 1976, 123 installations had been registered with the Department of Energy. The meaning of "installation" is still not entirely clear and it is thought

Merchant Shipping Acts.[123] Pursuant to S. 2 of the Act, the Secretary of State has issued Regulations which require that offshore installations be registered.[124] This was a preliminary step in the regulatory scheme, designed simply "to enable the Secretary of State to have a complete and full list of all rigs which are in existence"[125] in the area to which the Act applies. Registration of installations confers no "flag" status upon them.

Regulations have also been issued requiring that installations in relevant waters have a Certificate of Fitness.[126] Certificates

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that Regulations made pursuant to S. 44(4) of the Petroleum and Submarine Pipelines Act 1975 (which says, in essence, that Regulations can define what "things" are capable of being manned) may help in this regard. One result of such Regulations may be that Ekofisk booster platforms located on the U.K. continental shelf be registered. Conversation with Mr. M. Davey, Department of Energy, 16 June 1976.

123. This "dual personality," has not resulted in any practical problems, even during leadership transition from "captain" to "installation manager." *Ibid.*

124. The Offshore Installations (Registration) Regulations (1972 No. 702), effective 1 June 1972. A registration list is maintained by the Department of Trade. The main provisions of the Registration Regulations include S. 4 which imposes the registration requirement, S. 8 which provides that registration automatically lapses at the end of 25 years for fixed installations and 10 years for mobile installations, S. 7 under which registration may be cancelled if ownership changes or if the installation is dismantled, abandoned, destroyed or combined with another installation, and S. 11 which sets out a scheme of penalties and provides that it shall be a defence for an accused to prove that he acted with due diligence to prevent an offence.

125. Mr. Ridley, Under-Secretary of State for Trade and Industry in *Hansard*, H.C. Standing Committee G, 1st Sitting, col. 7, 17 June 1971. All "installations" whether fixed or mobile must be registered, even though since some rigs are classified as ships they are subject to merchant shipping legislation as well. Mr. Ridley in *Hansard*, H.C. Vol. 816, col. 648, 28 April 1971.

126. The Offshore Installations (Construction and Survey) Regulations (1974 No. 289), effective 1 May 1974, pursuant to S. 3 of the Act.

are issued by the Certifying Authority after a survey of the installation indicating that design and construction standards have been met.[127] The Regulations also set out practices to be observed in the siting, alteration and equipping of offshore installations as well as providing for certain exemptions.[128] Violation of the Regulations made under S. 3 subjects the owner and the installation manager and the concession owner *each* to criminal penalties.[129]

The Act requires the installation owner to appoint a person

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127. Under Ss. 4 and 6(1), the Secretary of State may appoint any person or body to conduct surveys. He has to date appointed five classification societies as Authorities. See Tronslin, P., "Safety Regulations in Use in the North Sea and Elsewhere," a paper presented at the Conference on Fatigue Problems in Offshore Steel Structures, 15-17 September, 1975, Geilo, Norway, arranged by Norske Sivilingeniørers Forening. The survey is intended to determine whether the installation has met the design and construction requirements appended to the Regulations in Schedule 2. S. 5(2).

128. Detailed requirements are set out in eight parts of Schedule 2. Siting is a consideration in that the installation must be able to withstand any combination of "(a) meteorological and oceanological conditions; and (b) properties and configuration of the sea bed and subsoil; to which the installation may foreseeably be subjected at the place at which it is or is intended to be located .... ." Schedule 2, Part II, "Environmental Considerations." Regulation S. 11 sets out criteria for termination of a Certificate and further provides that Certificate validity (subject to annual surveys of selected parts of the installation under S. 8) shall be for such periods as the Authority may specify, not to exceed five years. S. 12 provides for exemptions of all or any part of an installation. There are no specific regulations concerning fatigue in steel construction. See Tronslin, P., *op. cit.* in footnote 127, at p. 4.

129. S. 3(4). The fine on summary conviction is not to exceed £400; on conviction on indictment, the fine is unlimited and a prison term not to exceed two years may be imposed in lieu of or in addition to the fine. S. 44(1) of the Petroleum and Submarine Pipelines Act 1975, in extending the Mineral Workings Act to those pipelines in U.K.-controlled waters which are capable of being manned, exempts concession owners from liability because they may be geographically remote from the site of the offence. Lord Balogh in *Hansard*, H.L. Vol. 364, col. 931, 15 October 1975.

whom he believes competent[130] to be "installation manager."[131] The installation manager is responsible for safety, health or welfare, and the maintenance of order and discipline over all persons in or about the installation,[132] and must be present on any installation that is manned.[133] The manager has wide authority to carry out his

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130. The "Sea Gem" Committee of Inquiry had recommended that a single person be appointed 'master' of the installation. *Hansard*, H.C. Vol. 816, cols. 648-49, 28 April 1971. The master need not be an expert in the technical aspects of offshore operations; "it would only be necessary for him to be a mature and responsible person trained to have a wholesome respect for the sea and knowing what to look for in keeping everybody up to scratch." *Ibid.*, at col. 651. To this end it was planned that masters would "include qualified master mariners who will act when an installation is floating and experienced drilling engineers who will act when it is fixed." *Hansard*, H.L. Vol. 315, col. 745, 18 February 1971. No provision was made for a certification programme because it was thought too unrealistic to specify criteria in such a rapidly changing industry. *Ibid.*, at col. 749.

131. S. 4(1). An alternate installation manager must also be selected to ensure continuity of supervision. S. 4(1)(b). The owner is under a duty to remove an incompetent installation manager and must notify the Secretary of State of the initial appointments as well as subsequent changes. S. 4(1), (4). The Offshore Installations (Managers) Regulations (1972 No. 703) prescribes the notice necessary in this regard (by its S. 2), and also deals with notice required when a person is placed under restraint pursuant to S. 5(7) of the Act.

132. S. 5(2). The manager's authority "shall not extend to any matters for which another person is responsible as master, captain or person in charge of any vessel, aircraft or hovercraft." *Ibid.*

133. Both the owner (under S. 4(5)) and the manager (pursuant to S. 5(1)) must ensure that any manned installation is under the control of the installation manager. Each can be fined up to £500 for offences. Ss. 4(6), 5(1). Exceptions are made for cases of sudden sickness, other causes beyond the manager's control, or for other sufficient reason. S. 5(1). Even a production rig which is normally unmanned must have a master if it is visited. *Hansard*, Standing Committee G, 1st Sitting, col. 18, 17 June 1971. The Secretary of State may make exceptions to this requirement pursuant to S. 5(9) of the Act.

responsibilities.[134] It is an offence to disobey the lawful command of an installation manager.[135]

The manager must not allow any operation likely to endanger the seaworthiness or stability of the installation,[136] but in an emergency he may take any necessary measures to deal with the emergency, including action contrary to other provisions of the Act.[137] He may cause any person[138] to be put ashore in the U.K. if he reasonably believes it necessary to secure the safety of an installation or persons nearby, or that such action must be taken to maintain order and discipline.[139] The manager may also restrain or take other reasonable measures against any person whom he reasonably suspects has or is about to do any act likely to endanger the installation or persons in the area, or in order to maintain order and discipline.[140]

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134. The scope of the manager's powers was the subject of extensive Parliamentary debate, the Government contending that extraordinary powers were necessary because of the geographic isolation in a hostile environment, but some Members were concerned that powers granted be strictly limited to safety matters so as to prevent their abuse. *Hansard*, Standing Committee G, 2nd Sitting, cols. 52-68, 22 June 1971.

135. Subject to a maximum fine of £50. S. 5(3).

136. S. 5(4). The owner is responsible for the installation manager's conduct; an offence under S. 5(4) subjects *both* the manager and the owner to possible criminal prosecution. Summary conviction under this section carries a fine liability of up to £400; on conviction on indictment the fine is unlimited and a prison term not to exceed two years may be substituted or added to the fine.

137. S. 5(5).

138. This does not apply in respect of "any matters for which another person is responsible as master, captain or person in charge of any vessel, aircraft or hovercraft." S. 5(6).

139. S. 5(6).

140. S. 5(6). The sections of this Act authorising the manager to take certain actions against persons threatening the safety of

Restraint is limited to 24 hours unless it is intended that the person be landed in the U.K. at the earliest opportunity and timely notice of the restraint and the reasons therefor is sent to the prescribed U.K. authority.[141]

The Secretary has broad powers to make regulations for the safety, health and welfare of persons on offshore installations.[142] Regulations may set requirements for persons engaged in exploration or exploitation activities on installations, and for the prevention of accidents in the area nearby.[143] To this end, regulations may be made in respect of, *inter alia*,[144]

> "(2)(a) persons whether or not present in the course of their employment,
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> (b) the transport of persons and things to or from an installation,
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> (c) vessels, aircraft or hovercraft in the neighbourhood of an installation, and

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the installation is not unlike those vested in the aircraft commander by the Tokyo Convention. Indeed, aircraft and installations share the common characteristics of isolation and potential for major disaster. See, Convention on Offences and Certain Other Acts Committed on Board Aircraft (Tokyo, 1963), 58 *American Journal of International Law* 566-573 (1964).

141. S. 5(7). The authority is designated by S. 4 of (1972 No. 703) as the Secretary of State for Trade and Industry.

142. S. 6.

143. S. 6(1).

144. S. 6(3) provides that regulations may apply to any of the matters set out in the Schedule to the Act. The Schedule, "Subject Matter of Regulations" includes eight general areas involving offshore safety. A subsection, "Inspectors and inquiries," provides the Secretary of State with express authority to make regulations in respect of investigations and monitoring. This includes the power to conduct a public inquiry following an accident involving loss of life, one of the bases for the Public Inquiries Regulations discussed above. A second subsection,

(d) any operation or work whether on or near an installation, or in the water, or on or below the shore or bed of the sea or other waters."[145]

Regulations based in part on this section include those requiring the maintenance of logbooks and records of persons working on or near the installation,[146] for the inspection of installations by the Secretary of State and for the reporting to him of casualties,[147] for the holding of public inquiry into any accident endangering life and occurring on or in connection with an offshore installation in relevant waters,[148] and relating to diving operations in connection with offshore installations.[149]

"Supplemental," authorises regulations to require records and reports.

145. S. 6(2). S. 44(3) of the Petroleum and Submarine Pipelines Act 1975 further extends the powers to make regulations in S. 12(3) of this Act. The amendments provide authority for Regulations authorising inspection of any installation, or vessel used in connection with an installation, to effect the provisions of S. 6, and to require the payment of fees. This complements S. 6(4) which provides for inspectors, but confers no authority to enter vessels or premises.

146. Offshore Installations (Logbooks and Registration of Death) Regulations (1972 No. 1542), in operation 30 November 1972.

147. The Offshore Installations (Inspectors and Casualties) Regulations (1973 No. 1842), effective 1 December 1973.

148. The Offshore Installations (Public Inquiries) Regulations (1974 No. 338), effective 15 April 1974. The Secretary of State is empowered to appoint a court of inquiry and the Regulations provide for payment of witness and court costs. No inquiries had been undertaken pursuant to these Regulations as of mid 1976. Conversation with Mr. M. Davey, 16 June 1976.

149. The Offshore Installations (Diving Operations) Regulations (1974 No. 1229), effective 1 January 1975. The Regulations apply to operations of exploitation or exploration in relevant waters, even if from a foreign flag vessel. S. 2. The limitation to specified activities appears to ensure that the authority asserted by these Regulations is well within U.K. "sovereign rights" for the exploitation and exploration of its coastal

The authority to issue Regulations under S. 6(2) is wide indeed. The transport of persons to or from an installation, for example, could well be undertaken by a foreign vessel. To date the potential issue of U.K. regulation of foreign flag vessels used in connection with offshore operations, but also frequently located on the high seas, has not arisen because, according to an official in the Department of Trade, it has been possible to obtain voluntary compliance with U.K. Regulations.[150]

S. 7 contains detailed provisions in respect of the content and promulgation of Regulations. Before making Regulations, the Secretary of State is required to consult with organisations in the U.K. representative of those persons who will be affected.[151] Offences under the Act are actually violations of the Regulations issued pursuant to it. In consequence, S. 7 also sets forth detailed provisions for the creation and punishment of offences.[152]

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shelf natural resources, even when diving occurs in connection with submarine pipelines which, unlike installations, do not have a safety zone.

150. Archer, J., "Government Responsibilities for Maritime Safety," 19 *Trade and Industry* 130-134, at p. 134 (18 April 1975).

151. S. 7(1). This is consistent with the U.K. policy of regulation by negotiation and compromise. Further subsections provide the Secretary of State with wide discretion to create exemptions to regulations. S. 7(4), (5), (6). The Secretary of State is also expressly allowed to vary provisions in accordance with different circumstances, such as distinguishing between installations which are registered vessels and those which are not, and between stationary and in transit installations. S. 7(7). (In this regard, note that S. 8(5) expressly applies S. 3 of the Continental Shelf Act to installations in transit, thus making them subject to U.K. jurisdiction as extended by that section.)

152. Penalties for an offence created by Regulation cannot, on summary conviction, exceed a fine of £400 and on conviction on

The major remaining provisions of the Act deal with jurisdiction, criminal offences, prosecutions, and civil liability for breach of statutory duty. They will be summarised, as they are similar to the terms of the Continental Shelf Act 1964, discussed above.

S. 8 of this Act amends S. 3 of the Continental Shelf Act 1964 by providing that existing law applies not only to installations in designated areas, but to those within territorial waters as well. S. 10 of this Act goes further than the Continental Shelf Act, however, in that it authorises prosecutions for violations of Regulations even when the offence was committed--not only on an installation or within the safety zone--but in a designated area. Regulations could, therefore, create an offence which would subject foreign vessels on the high seas to U.K. criminal law.[153] No Regulations have yet assumed this power, yet it raises again the issue of whether U.K. interference with navigation on the high seas, even if in connection with the exercise of its sovereign rights over its continental shelf, would be consistent with international law.

It has been suggested that the most likely offence which might raise this issue would be one concerning the use of supply vessels.[154] The interest sought to be protected here may or may not be of the same importance to the U.K. as the protection of installations and

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indictment, imprisonment for two years and/or an unlimited fine. S. 7(2), (3). Regulations must be contained in a statutory instrument subject to annulment by either House of Parliament. S. 7(8).

153. See the discussion of hot pursuit above at p. 290. S. 12(4) expressly provides that the Act "applies to any individual whether or not he is a British subject" and that it applies to foreign corporations as well.

154. Sibthorp, M. (ed.), *op. cit.* in footnote 24, at p. 170.

personnel thereon. A foreign supply boat, carrying only cargo and crewed by foreign nationals, on a one-time charter which violated a loading regulation to the harm of no one is not a strong candidate for punishment under British law. A similar vessel, differing in that it was on a regular run pursuant to contract[155] with the installation licensee and that the violation was flagrant (for example, gross overloading) the result of which caused heavy loss of British life would present a different case. It was submitted that the U.K. interest in the welfare of the persons through whom sovereign rights are being exercised weighs heavily against the classic doctrine of exclusive flag State jurisdiction. The second example is a case of absentee ownership not significantly different from the use of flags of convenience. The interest of H.M.G. in the safety of a vessel (the flag State of which has no practical interest in any freedom of navigation save between the Forties Field and Aberdeen) is, in the second hypothetical case, clearly predominant.

S. 9(1) provides for piercing the corporate veil when an offence has been committed by a corporation with the consent or connivance of, or results from the neglect of, a corporate officer.[156] As in the

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155. H.M.G. could also control substandard vessels indirectly through the terms of licences with the person granted seabed rights. It could be a condition of, and a Model Clause contained in, the licence that the licensee would only employ up-to-standard equipment, whether directly or indirectly by the use of contracted services. It should also be noted, that as in the Continental Shelf Act 1964, H.M.G. controls prosecutions so that only flagrant violations of British criminal law would be likely to come before the courts. To date, there have been no prosecutions because H.M.G. has been able to achieve the desired control through the use of voluntary arrangements. S. 10(3), (4).

156. The provision of personal liability and attendant criminal penalties is intended to deter criminal acts that otherwise

Continental Shelf Act, proceedings for an offence may be taken anywhere in the U.K. and police powers are exercised by the constable of the port from which the installation is serviced.[157]

S. 11 provides for an action to be brought under certain circumstances against a person for breach of statutory duty imposed by the Act. This right is limited to civil actions alleging personal injury, although it is possible to bring an action for other injury outside the provisions of the Act.[158]

Two general criticisms may be directed at the Mineral Workings Act from the standpoint of marine pollution control. The first concerns the U.K. organisational framework: many authorities think that the network of departmental responsibility is far too complex for efficient regulation of offshore activity.[159] A corollary of this

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might be committed by employees knowing that a fine would be paid by the corporation as a cost of doing business. S. 9 provides that the prosecution need merely aver that the act complained of occurred within relevant waters; no further proof is required. It is then the defendant's burden to rebut the allegation. S. 9(2). A statutory defence for one accused of a criminal act under section 3 (Construction and survey regulations) and sections 4 and 5 (Masters of offshore installations) provides that he may escape liability by proving "due diligence to enforce the execution of this Act," and that the violation occurred "without his consent, connivance or wilful default." S. 9(3)(a), (b). The defences under S. 9(3) and under the Regulations do not apply to civil proceedings. S. 11(4).

157. S. 9(4), (5).

158. S. 11(3). An action may be brought against the Crown as concession owner, although it is expressly provided that no right of action exists against Her Majesty in her private capacity or against persons members of Her Majesty's armed forces. S. 11(5), (6). No actions have been brought under S. 11. Conversation with Mr. M. Davey, Department of Energy, 16 June 1976.

159. Elizabeth Young has noted that at least 21 Government Departments and Offices are involved in maritime affairs. Young, E., "Structure of Government," in Young, E. and Fricke, P. (eds.),

complexity is the difficulty of arriving at common requirements and enforcement among the various Government Departments.

The second deficiency of the Act is also external rather than constitutional: the British approach to standard setting is to entrust this task to classification societies; conversely, the Norwegian Government develops its own standards, although classification societies are used to test and inspect. Common standards, especially in safety matters, should be developed for U.K. and Norwegian offshore installations, especially in common fields. This is particularly important in the case of mobile installations which may move from one sector to another. Not only is it more convenient for the operators of such installations, but uniformity of standards would make it easier to comply with the law. Uniform standards would be simpler and facilitate enforcement, not only by the coastal State, but conceivably under a joint scheme. Inspection of U.K. and Norwegian installations clustered near the median line could be undertaken jointly, with a resulting decrease in cost and a better guarantee that, as is often the case, the regulators and the regulated do not come to have such an identity of interests that the standard of enforcement declines.

Sea Use Planning, Fabian Tract 437, London (1975). Both this Tract and the David Davies Study recommended that U.K. organisation be restructured to improve intra-Governmental communication. See Sibthorp, M. (ed.), *op. cit.*in footnote 24. It is also of interest to note that the principal recommendation among the 94 proposals of the Royal Commission on Environmental Pollution in their *Fifth Report* [H.M.S.O., Cmnd. 6371 (1975)] was for a centralized environmental protection agency called Her Majesty's Pollution Inspectorate.

4. Prevention of Oil Pollution Act 1971[160]

The Prevention of Oil Pollution Act came into effect 1 March 1973,[161] thereby consolidating the Oil in Navigable Waters Acts 1955 to 1971 and S. 5 of the Continental Shelf Act 1964.[162] The Act applies to the introduction of oil into the sea from each of the four major sources of such pollution cited by the Royal Commission in their Fourth Report: blowouts from offshore wells, ruptures from oil storage tanks, fractures of pipelines, and shipping casualties.[163] S. 3 of the Act concerns oil discharges from pipelines and offshore operations and will be discussed immediately. Those parts of the Act relevant to vessel-source pollution will be examined in the following section of this thesis.[164]

S. 3 of the Act provides that the discharge of oil or an oily mixture into any part of the sea,

> "(a) from a pipeline; or
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> (b) (otherwise than from a ship) as the result of any operation for the exploration of the sea-bed

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160. 1971 Chapter 60.

161. The Prevention of Oil Pollution Act 1971 (Commencement) Order (1973 No. 203).

162. Preamble. Since this consolidation enacted no new law, it was not debated. *Hansard*, H.L. Vol. 321, col. 1208, 9 July 1971. However, the legislative history of the earlier Acts thus consolidated is available from the Parliamentary debates and will be referred to frequently. The Oil in Navigable Waters Acts were primarily concerned with vessel-source oil pollution. S. 5 of the Continental Shelf Act 1964 dealt with oil pollution from pipelines and offshore installations; it is therefore of particular relevance to the discussion in this section.

163. *Fourth Report of the Royal Commission on Environmental Pollution*, Cmnd. 5780 (1974), para. 129, p. 45.

164. See, the discussion below, at p. 342.

> and subsoil or the exploitation of their natural resources in a designated area,"

constitutes an offence for which the pipeline owner or the person carrying on the operations shall be liable.[165]

S. 3 prohibits the discharge of *any* oil; S. 5 of the Continental Shelf Act which is replaced by S. 3 had only prohibited discharges of oil in concentrations greater than one-hundred parts per million of the mixture (p.p.m.). There are two reasons for this change.

The p.p.m. formula was the standard of both the 1954 IMCO Convention and the 1955 Oil in Navigable Waters Act which implemented it.[166] When, in 1963 provision was being made for the development of the continental shelf in the terms of the Continental Shelf Bill, it was decided to include a section on control of oil pollution from pipelines and offshore installations.[167] This was necessary not only as a matter of domestic concern, but in order to satisfy an impending treaty obligation imposed by the Continental Shelf Convention to take measures in installation safety zones to protect sea life[168] as well as the existing duty pursuant to customary law and the High Seas Convention to regulate oil pollution from pipelines and installations.[169] It was the natural course of action to adopt the existing p.p.m. dis-

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165. The prohibition of oil discharges resulting from natural resource development would cover possible instances involving coal extraction, etc.

166. The 1954 IMCO Convention is discussed above, at p. 151.

167. *Hansard*, H.C. Standing Committee D, cols. 77-78, 19 November 1970.

168. Continental Shelf Convention, Article 5(7).

169. High Seas Convention, Article 24.

charge criterion for use in the Continental Shelf Act.

But, as described above in connection with the 1954 IMCO Convention and the 1969 Amendments thereto, the p.p.m. formula soon proved difficult to enforce and research by the U.K. Warren Spring Laboratory indicated that the amount of oil discharged in relation to the distance travelled by a ship is a critical factor in the determination of whether lasting pollution will result from the discharge of oily effluent.[170] These considerations led to the 1969 Amendments which substitute an allowable discharge per mile formula for the p.p.m. criterion. The Oil in Navigable Waters Act 1971, now incorporated into the Prevention of Oil Pollution Act 1971, applies the 1969 Amendments to U.K. vessels, even though the Amendments are not yet in force.[171] When S. 5 of the Continental Shelf Act 1964 was incorporated into the Prevention of Oil Pollution Act, the Government was faced with a decision. S. 5 concerned oil pollution from pipelines and installations, so application of the new discharge per mile formula was impossible. It was therefore decided to amend this provision by dropping the p.p.m. criterion and imposing an absolute prohibition on *any* oil discharge, thus in effect treating installations and pipelines as stationary ships.

So long as activities on the U.K. continental shelf were confined to exploratory drilling, this was a workable solution. But an absolute prohibition on the discharge of oil or oil mixtures from production platforms is at the present state of technology impossible:

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170. See above, at pp. 156-157.

171. See below, at p. 342.

there will always be some oil in operational discharges.[172] In consequence, the Petroleum and Submarine Pipelines Act 1975, in S. 45(2), gives the Secretary of State authority to exempt such discharges. The present level of oil discharge from production installations is thus not a *standard*; rather it is set by a *policy* dictated by the limits of technology: "it is the intention of the Department of Energy that operations, to receive exemption, must use the best practicable means available to reduce the oil content of the discharged waters."[173] The Norwegian State Pollution Control Authority has adopted a similar approach.[174]

The scheme of oil pollution prevention from seabed operations contained in the Prevention of Oil Pollution Act is broad in some respects and narrow in others.

A remarkably broad application of the Act to pipelines is a conspicuous feature. The text of S. 3 does not qualify "pipeline" nor is the term clarified elsewhere in the Act. Thus, an oil discharge from a foreign-owned pipeline which merely crosses the U.K. continental shelf would subject the owner to British criminal penalties. A defendant in a criminal case might well argue that prosecution under British law violates his right to lay pipes beneath the high seas.[175] On the other hand, it will be remembered that the High

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172. See above, at p. 49.

173. U.K. Department of the Environment, Central Unit on Environmental Pollution, *The Separation of Oil from Water for North Sea Oil Operations*, Pollution Paper No. 8, H.M.S.O. (1976), at para. 3, p. 1.

174. See below, at p. 465.

175. High Seas Convention Articles 2(3) and 26(1) declare that all

Seas Convention declares that every State is under a duty to draw up rules to prevent marine oil pollution from pipelines. This potential conflict of competing interests has been recognised and provided for expressly in subsequent legislation. In the Petroleum and Submarine Pipelines Act 1975, U.K. regulation of pipelines on its continental shelf extends to those with origin or termination points in U.K. territory or in a designated area. Regulations in respect of pipelines merely crossing the U.K. continental shelf may be made only to the extent that the Secretary of State deems their provisions "consistent with the jurisdiction which belongs to the United Kingdom under international law."[176]

The Prevention of Oil Pollution Act is broadly drawn in another way: "discharge" of oil, with one exception,[177] includes "escape."[178] It is therefore irrelevant how oil got into the sea; the fact that it is there is enough to bring the incident within the Act. But

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States enjoy the right to lay submarine pipelines beneath the high seas. Continental Shelf Convention Article 4 provides that subject to the coastal State's right to develop natural resources, it may not impede the laying or maintenance of pipelines or cables on the continental shelf.

176. Petroleum and Submarine Pipelines Act 1975, S. 31(1), (2). See below, at p. 332.

177. S. 11 of the Act, "Duty to report discharge of oil into waters of harbours" distinguishes between discharges and escapes of oil. Discharges of oil from places on land are not covered. S. 6(2) and (3) provide a special defence for such discharges. These provisions are the result of a Parliamentary decision that economic considerations precluded the inclusion of refineries within the class of intentional discharges; refineries must discharge some oily mixture. *Hansard*, H.L. Vol. 191, cols. 735-37, 3 March 1955.

178. S. 29(3).

liability does not follow such an incident automatically, for two major provisions of the Act restrict its application considerably.

"Oil" has two meanings within the Act. Because the oils to which the 1954 IMCO Convention applies are specified, those provisions of the Prevention of Oil Pollution Act which implement that treaty employ the limited definition of oil.[179] Thus, control of pollution from vessels on the high seas is restricted to certain oils.[180] On the other hand, those Sections of the Act regulating pollution which occurs in U.K. waters do not implement the Convention: these provisions can therefore apply to all oil, and in the case of vessel-source pollution they do.[181]

However, S. 3 of the Prevention of Oil Pollution Act applies the IMCO Convention definition of oil to discharges from pipelines and installations in designated areas. Although this is sufficiently broad to include most oil pollution which is probable from pipelines

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179. See the discussion of the 1954 IMCO Convention above, at p. 151.

180. Included are crude, fuel, and lubricating oil, as well as such heavy diesel and other description of oil as may be defined by regulations. S. 1(2). The Oil in Navigable Waters (Heavy Diesel Oil) Regulations (1967 No. 710) promulgated under the Oil in Navigable Waters Act 1955 and exempted from repeal by S. 33(2) of the Prevention of Oil Pollution Act, is the only exercise of the power to define additional oils. Also regulated are "oily mixtures" which include oil mixed with "any other substance." S. 29(2). Drilling muds and oil-contaminated chemicals discharged from an offshore installation could therefore be oily mixtures as could various types of vessel discharges.

181. The provisions also apply to installations located in U.K. waters. S. 2(1)(e). Unless qualified, "oil" in this Act "means oil of any description and includes spirit produced from oil of any description, and also includes coal tar." S. 29.

and installations today, in the future it may prove necessary to expand the definition of oil to include the lighter fractions such as petrol. A supertanker receiving petrol piped from an offshore refinery adjacent to a cluster of production platforms, or from a mooring buoy, is certainly a foreseeable situation, and one fraught with potential for marine pollution. If one takes the view that the structure is an "installation," S. 3 does not apply because petrol is not one of the specified hydrocarbon products. If one thinks that the loading is actually occurring at an offshore terminal, it is still questionable whether present U.K. law prohibits spills of refined products. Althouth the Prevention of Oil Pollution Act does apply to U.K. harbours and would prohibit such a discharge therein, there is as yet nothing in U.K. law which applies the Act to offshore terminals.[182]

The Prevention of Oil Pollution Act is limited to a standard of fault liability. During Parliamentary Debate it was made clear that in H.M.G.'s view, the need for energy which could only be acquired by means of an emerging technology justified a standard of "reasonable care" rather than strict or absolute liability.[183] The Act therefore provides that in respect of a pipeline owner or "the person carrying

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182. Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976.

183. The Parliamentary debates indicate that Members were well aware of a possible conflict between the desired objective of developing British offshore oil resources quickly and environmental protection. The reasonable man standard provided a compromise: an offshore operator who acted reasonably would not be inhibited in his activities by considerations of strict or absolute liability; conversely, an irresponsible operator would be liable. *Hansard*, H.C. Vol. 688, col. 224, 17 December 1963.

on operations"[184] in a designated area,

> "it shall be a defence to prove that neither the escape nor any delay in discovering it was due to any want of reasonable care and that as soon as practicable after it was discovered all reasonable steps were taken for stopping or reducing it."[185]

The Act does not elaborate on what standards of care would be considered reasonable. It is likely that the Model Clauses contained in the licence required for seabed operations would be of great value in resolving this point. Thus, it would be pertinent to inquire whether the escape occurred despite "good oilfield practice." Moreover, Regulations may be made under the Petroleum and Submarine Pipelines Act (discussed below) which set standards for construction and use of offshore pipelines.[186] When such Regulations come into force the standard of care a pipeline owner must observe to escape liability under the Prevention of Oil Pollution Act will become much more clear.

Neither the pipeline owner nor the person carrying on the operations shall be liable to prosecution if "the discharge was from a place in his occupation and he proves that it was due to the act of a

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184. "The person carrying on operations" is not defined in the Act, however a Government spokesman commented that he "assumed" the person in question would be the licensee company. *Hansard*, Standing Committee D, col. 26, 17 November 1970.

185. S. 6(1). As this defence is based on a standard of reasonable care, it applies only to escapes, not discharges. The Government declined to provide guidelines or minimum mandatory precautions to assist in determining what steps would be reasonable. *Hansard*, H.C. Vol. 688, col. 273, 28 January 1964. While the lack of guidelines necessarily leaves this defence more ambiguous than it would otherwise be, the omission allows flexibility. What is reasonable will vary with the circumstances--and with technological advances upon which new standards (express or implied) will rest.

186. Petroleum and Submarine Pipelines Act 1975, Part III.

person who was there without his permission (express or implied)."[187] This limitation of liability for discharges originated in the Oil in Navigable Waters Act 1955, in which it applied to discharges from places on land.[188] The occupier was only to be liable for discharges resulting from conduct on his part which fell below the standard of reasonable care. If he took reasonable precautions to bar unpermitted entry to his premises there could be no implied permission to enter and therefore no liability. The provision was included in the Continental Shelf Act to qualify liability for discharges from pipelines and installations and was subsequently incorporated into the Prevention of Oil Pollution Act.[189]

There is no statutory provision for enforcement of the Prevention of Oil Pollution Act in respect of discharges from pipelines or installations. Those sections of the Act concerned with the control of vessel-source oil pollution contain provisions for inspections and a requirement for the maintenance of records; no such provisions are made in the Act for offshore installations. Although information concerning discharges must be transmitted to H.M.G. pursuant to the

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187. S. 3(1). "Place in his occupation" refers to control over the premises. Letter from Mr. J. Clayton, Department of Trade, 9 July 1976.

188. The defence to discharges from places on land is included in the present Act at S. 2(1)(d). It was amended so that it is now clear that the trespasser is guilty of an offence if the occupier establishes this defence. *Hansard*, Standing Committee D, col. 21, 17 November 1970.

189. U.K. marine pollution control legislation which does not implement international conventions uses fault rather than strict liability, and no change from this approach is detectable. See, for example, the Petroleum and Submarine Pipelines Act 1975.

Model Clauses contained in the licence,[190] this requirement pertains to "any event causing escape or waste of petroleum," language clearly indicating concern with accidental rather than operational discharges. Although the Secretary of State may intend to require some sort of formal reporting system (such as the maintenance of oil record books reflecting operational discharge data) when he makes exception Orders, there is no requirement that he do so. The Prevention of Oil Pollution Act is deficient in not requiring a formal reporting system for operational discharges, and ought to be amended or supplemented by provisions in another instrument.

Violation of S. 3 discharge provisions subjects the offender to a fine of up to £50,000 on summary conviction and to an unlimited fine following conviction on indictment.[191] As in the Continental Shelf Act, prosecutions are subject to strict Government control, and can only be brought by or with the consent of the Director of Public Prosecutions or his equivalent.[192] There are likewise provisions included for piercing the corporate veil so as to render corporate officers personally liable in cases of abuse of their responsibility.[193]

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190. Petroleum (Production) Regulations 1976, Schedule 5, Model Clause 21(8); Schedule 7, Model Clause 9(3).

191. No prosecutions for unpermitted discharges of oil from offshore installations have occurred. Conversation with Dr. J. Cowley, Department of Trade, 11 June 1976. However, it must be remembered that production of petroleum in the U.K. sector only started in mid 1975.

192. S. 19(7).

193. S. 19(8).

5. Petroleum and Submarine Pipelines Act 1975[194]

This Act was intended to establish the British National Oil Corporation,[195] to amend the terms of production licences, to make provisions in regard to submarine pipelines and refineries, and for other matters.[196] Two parts of the Act are of particular relevance to the control of marine pollution: Part II, which amended the 1966 Petroleum (Production) Regulations, has since itself been replaced by the 1976 Regulations.[197] Part III, "Submarine Pipelines," will be examined in this section.

S. 20(1) gives the Secretary of State[198] control of construction and use of pipelines in "controlled waters."[199] Upon this

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194. 1975 Chapter 74, in force 1 January 1976 pursuant to the Petroleum and Submarine Pipelines Act 1975 (Commencement) Order (1975 No. 2120).

195. The BNOC will be a vehicle for Government participation in petroleum development. It will hold the Government's interest in production licences either in partnership with private companies or as sole licensee. BNOC can also give the Government advice and perform services (such as management of the Government's pipeline and storage system which is kept for defence) as well as engage in oil refining and distribution. *Hansard*, H.C. Vol. 891, col. 490, 30 April 1975.

196. "To authorise loans and guarantees in connection with the development of the petroleum resources of the United Kingdom and payments in respect of certain guarantees and loans by the Bank of England; and for purposes connected with the matters aforesaid." Preamble to the Act. The Act in effect implements part of the Labour Government's "Manifesto," that part which relates to offshore operations being reflected in "United Kingdom Offshore Oil and Gas Policy," Cmnd. 5696 (1974).

197. See above, at p. 297.

198. The Secretary of State for Energy.

199. "Controlled waters" means the territorial sea adjacent to the United Kingdom and the sea in any designated area within the meaning of the Continental Shelf Act 1964. S. 20(2). A

provision rests a scheme intended to rectify a previous U.K. legislative deficiency: prior to the entry into force of Part III of this Act, the Government had no statutory authority to control pipelines outside territorial waters or designated areas.[200] The new powers enable the Secretary of State to control pipeline use and routeing, thus reducing proliferation as well as minimising interference with other users of the sea. The Secretary of State may also set safety and construction standards for pipelines, an important power in respect of pollution resulting from pipeline defects and various potential accidents.[201]

"controlled pipeline" is so much of any pipeline as is in, under or over controlled waters. S. 20(2). Construction commenced prior to 1 January 1976 is exempted, as is use of a pipeline whose construction commenced before this date. S. 20(1). As reference is to "territorial sea" rather than "3 miles," no amendment of this provision need follow British declaration of a 12 mile coastal belt, should this occur.

200. See, Committee on the Environment, North Sea Oil and the Environment," a Report to the Oil Development Council for Scotland, H.M.S.O. (1974), at p. 17. The Pipelines Act 1961 and the Coast Protection Act 1949 provided some control of pipelines, but the 1961 Act applied only within the territorial sea and safety zones surrounding installations, and the 1949 Act is primarily concerned with obstructions to navigation. See, Advisory Committee on Oil Pollution of the Sea, *Annual Report* (1972), at p. 6.

201. *Hansard*, H.C. Vol. 891, cols. 492-93, 30 April 1975; H.L. Vol. 363, col. 1938, 29 July 1975. Although the Mineral Workings (Offshore Installations) Act 1971 concerns safety, it does not apply to pipelines, according to a Government spokesman, and Part III therefore fills a gap in U.K. legislation. *Hansard*, H.L. Vol. 363, col. 1990, 7 August 1975. As a general rule, pipelines are regulated by the Petroleum and Submarine Pipelines Act, whereas manned apparatus and installations on pipelines or connected with them are the concern of the Mineral Workings (Offshore Installations) Act 1971. *Hansard*, H.C. Vol. 899, cols. 517-18, 12 November 1975. S. 44 of the Petroleum and Submarine Pipelines Act makes it clear that the Mineral Workings (Offshore Installations) Act 1971 applies to pipelines and related structures if they are capable of being manned.

The Act requires that a person wishing to use or construct a pipeline must seek an authorisation from the Secretary of State.[202] The Act expressly empowers the Secretary of State to include as terms within a works authorisation,

> "the route of the pipeline, the boundaries within which any works may be executed in pursuance of the authorisation, the design and capacity of the pipeline or of part of it and the steps to be taken to avoid or reduce interference by the pipeline with fishing or with other activities connected with the sea or the seabed or subsoil."[203]

Schedule 4 to the Act details the procedures by which the Secretary of State's powers shall be exercised. Part I[204] of Schedule 4 provides that the Secretary of State, either on his own initiative or in consequence of representations made by any other person, may question a proposed pipeline routeing for,

> "(a) the purpose of avoiding or reducing danger to navigation, to persons engaged in and vessels and equipment used for fishing, to some structure or apparatus (which may be the pipeline) or to marine flora or fauna;
>
> (b) the purpose of facilitating the use of the pipeline by persons other than the applicant where it appears to the Secretary of State that such persons desire to use the pipeline;
>
> (c) the purpose of avoiding or reducing interference

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202. S. 20. By mid 1976 only one use authorisation had been issued. Conversation with Mr. K. Mayo, Department of Energy, 16 June 1976.

203. S. 21(3)(c). The Secretary of State may also include terms in an authorisation concerning length of authorisation, construction and use, commodities which may be transported, funds required against possible liability, and information which must be supplied to him. S. 21(3). Normally, the duration of an authorisation is unlimited. S. 21(4).

204. Part I deals with "Works Authorisations;" Part II consists of a single paragraph concerning "Other Authorisations."

with fishing or the exploitation of mineral resources;

(d) any other purpose which the Secretary of State considers proper."[205]

The power claimed to regulate the routeing of controlled pipelines under the authorisation system is well based in international law. Thus, the High Seas Convention requires that freedoms of the sea be exercised with reasonable regard to other users, and that States draw up regulations to prevent oil pollution from pipelines.[206] That Convention also obligates States desiring to lay a pipeline beneath the high seas to "pay due regard to cables or pipelines already in position on the seabed."[207] The Continental Shelf Convention prohibits "unjustifiable interference with navigation, fishing or the conservation of the living resources of the sea."[208] Each of these obligations will be more easily satisfied because of the new powers to be exercised by H.M.G.

Both the High Seas and the Continental Shelf Conventions limit the discretion of the coastal State to regulate pipelines on its con-

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205. Schedule 4, Part I, S. 6. It is interesting to note that both (a) and (c) are designed to protect fishermen. This reflects the concern for the fishing industry apparent throughout the debate on competing uses of the sea. See, for example, *Hansard*, H.L. Vol. 364, col. 931, 15 October 1975.

206. High Seas Convention, Articles 2 and 24.

207. High Seas Convention, Article 26(3).

208. Continental Shelf Convention, Article 5(1). This obligation is also included as a Model Clause in production licences (Schedule 5, Clause 23) and exploration licences (Schedule 7, Clause 10) of the Petroleum (Production) Regulations 1976. The U.K. duty under the Convention can now be enforced by criminal as well as contractual sanctions.

tinental shelf. In addition to several indirect limitations,[209] both Conventions restrict regulation to that which is reasonably necessary to enable development of the natural resources of its continental shelf.[210] The "Submarine Pipelines" section of the Act and Schedule 4 which complements it are consistent with this limitation.

H.M.G. were well aware that U.K. authority over activities on the continental shelf was limited to "sovereign rights." The application of the "Submarine Pipelines" section was therefore limited to pipelines which begin or end in the U.K. or controlled waters.[211] The Act may be made applicable to pipelines terminating within U.K. territory because pursuant to her territorial sovereignty the U.K. may make acceptance of its terms a condition of entry. Pipelines ending or beginning on the U.K. continental shelf are likely to do so because they are associated with the development of the natural resources of the continental shelf--an activity over which H.M.G. has sovereign rights. A transverse pipeline may be regulated only to the extent "consistent with the jurisdiction which belongs to the United Kingdom under international law."[212]

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209. The High Seas Convention restricts the activities of users of the seas by the general requirement that they have reasonable regard to others. Article 2. The Continental Shelf Convention limits the coastal State to "sovereign rights" in connection with the development of the natural resources of its continental shelf. Article 2(1).

210. High Seas Convention, Article 26(2); Continental Shelf Convention, Article 4.

211. S. 31(1).

212. S. 31(2).

If the Secretary of State rejects an application to construct a pipeline, reasons must be given for the rejection.[213] If the Secretary of State questions a proposed pipeline routeing he must notify any person likely to be affected as well as the applicant, and include the reasons for his opinion in the notice unless it would be contrary to the national interest to include such reasons.[214] The Secretary of State must notify any person affected of his decision following the hearing, and if he disallows the application, include the reasons for his decision in the notice to the applicant unless it would be against the national interest to do so.[215]

It is submitted that the procedure outlined above is fundamentally fair and reasonable. The provision which confers the right upon *any person* to make representations to the Secretary of State in respect of a proposed pipeline routeing is of particular interest both as an exception to the usual drafting of statutes intended to control environmental pollution[216] and because it is unqualified. The Secretary of State may question a routeing based on a complaint by a foreign national or even by a plaintiff who would lack the requisite interest necessary to have the standing required by a court. The Secretary of State is only obligated to explain his decision to interested persons, but surely this limitation is "reasonable" within

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213. Schedule 4, S. 2.

214. Schedule 4, Ss. 4, 5, 6.

215. Schedule 4, S. 8.

216. None of the instruments reviewed in this thesis give an individual or organisation a right to bring an action; this Act is exceptional in that it at least allows such plaintiffs to make representations to the Secretary of State.

the meaning of the High Seas and Continental Shelf Conventions. What is more troubling is the exception provided whereby the Secretary of State need not give reasons for refusing an application if it would be against the national interest to do so, and the absence of any provision for review by an impartial tribunal.

These defects are closely related. It is not necessary to instance cases in which "the national interest" has been used to cover up an abuse of power at the highest levels of Government. That the British approach to regulation of offshore activities emphasises the reasonable man approach and that no abuses of power have been thus far detected begs the question of what is possible. It is recognised that the point in issue presents a particularly nice problem of line drawing between the competing interests of national security and those basic considerations of due process under the law which require that a judge provide reasons for his decisions.[217]

Routeing can only be controlled for the reasons set out above. The inclusion in that list of the clause, "any other purpose which the Secretary of State considers proper" gives that official wide discretion. There is little question that some such provision was necessary. Draftsmen cannot foresee every eventuality and to omit the clause in question might inhibit the Secretary of State in the lawful performance of his duties. Furthermore, it must be remembered that discretion is not unlimited: what is "proper" must be related to the purposes of the Act. The Secretary of State would clearly be

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217. For example, Article 56(1) of the Statute of the International Court of Justice requires that Court to give the reasons which support its judgments.

acting *ultra vires* the Act and the clause if he decided that it was "proper" to order a routeing for personal profit or for the profit of a company or individual.

A second major power conferred upon the Secretary of State and relevant to the control of marine pollution from pipelines is his authority to make regulations to ensure the safe construction and operation of pipelines and to protect persons engaged on pipeline works.[218] Such regulations may apply to an exceptionally wide spectrum of offshore activities, including the use of

> "any aircraft, vessel, vehicle, structure, plant, equipment or other thing for the purposes of any pipeline works and with respect to the movement of and the precautions to be taken on or in connection with any of those things which are used for the purposes of any pipeline works or are in the vicinity of a pipeline or pipeline works."[219]

It will be observed that the provision cited applies not only to vessels, etc. involved in seabed operations, thus arguably providing a jurisdictional nexus, but to such vessels "in the vicinity" of pipelines as well. Neither the High Seas nor the Continental Shelf Conventions confer an express right upon a State to control other users of the sea and superjacent airspace in the vicinity of pipelines. Indeed, one might argue that as the latter instrument expressly provides for safety zones around installations, had a similar zone been intended to protect pipelines it would have been specifically set out and not left open to arguments as to whether it could be implied.[220]

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218. S. 26(1).

219. S. 26(1).

220. Even the RSNT proposed at UNCLOS III does not provide for pipeline safety zones.

However, some control over vessels to prevent damage to pipelines may be necessary and not inconsistent with international law if reasonably applied. It is generally accepted as a fact that fish, and hence fishermen, are attracted by underwater installations which form a sort of artificial reef.[221] It is possible that pipeline damage could result from a trawl board or from the force exerted by a moving fishing vessel if the trawl became snagged on the pipeline.

Fishermen deliberately trawling near submarine pipelines are not strictly paying "reasonable regard to the interests of others" as required by the High Seas Convention which applies to them through their State. On the other hand, to the extent that fishermen are denied the right to fish on the high seas there is a clear injury to them.

The approach taken by H.M.G. to resolve this conflict is reasonable. In lieu of a safety zone, H.M.G. have elected to give the Secretary of State certain powers to interfere with vessels and aircraft in the interest of effecting a reasonable compromise. This is far more flexible than a safety zone which might be established as a "prohibited area" in respect of other uses of the sea, and is certainly no more susceptible to abuse by *mala fides* implementation. It is submitted, therefore, that the provision of the Act in question is consistent with the international law *lex lata*.

The Secretary of State is authorised to enforce the part of the Act concerned with "Submarine Pipelines" by promulgating regulations. Regulations may provide for inspectors and confer upon them

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221. See above, at p. 64.

various powers of entry and examination,[222] they may require the maintenance of records and impose a duty to provide information,[223] and regulations may set out procedures for inquiries following an accident connected with a pipeline.[224] The Secretary of State has not yet exercised his powers under this section.

Concessionary, criminal and civil sanctions may follow an offence under the "Submarine Pipelines" part of the Act. The concessionary penalty is loss of the authorisation. Revocation can occur for a number of reasons, including the contravention of a term of the authorisation or an obligation contained in notice duly served.[225] Ownership of a controlled pipeline for which authorisation has been revoked vests in the Secretary of State.[226] There is no provision for appeal of the Secretary of State's decision, although an aggrieved authorisation holder may make representations to him.[227] The Secretary of State is limited to revocation of authorisation only when it is reasonable that he do so, yet he remains the sole judge of what is reasonable. As in the case of a refusal by the Secretary of State to issue a routeing authorisation, revocation of an authorisation without provision for appeal to a tribunal independent of administrative interests lacks a vital check against possible abuse.

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222. S. 27(1), (2).

223. S. 27(2)(g).

224. S. 27(3).

225. S. 24(4).

226. S. 25(1).

227. Conversation with Mr. K. Mayo, Department of Energy, 16 June 1976.

It is a criminal offence, punishable by fine[228] to construct or use a pipeline without an authorisation, to contravene the provisions of certain notices, or to make false or reckless statements for the purpose of influencing the Secretary of State in respect of four matters including the issuance of authorisations.[229] As in the Acts previously discussed, prosecutions are tightly controlled by H.M.G.[230]

C. Pollution from Tankers and Support Vessels

1. Prevention of Oil Pollution Act 1971

Although a small part of this Act concerns the prevention of oil pollution from seabed operations and was discussed above,[231] the instrument is primarily concerned with the control of oil pollution from vessels. The present Act in fact is composed to a considerable extent of the provisions previously contained in the Oil in Navigable Waters Acts 1955 to 1971, instruments now consolidated in the Prevention of Oil Pollution Act 1971. The Oil in Navigable Waters Act 1971 is of particular importance because it radically amended earlier legislation and debates on the Oil in Navigable Waters Bill will be referred to frequently.

The original purpose of the Oil in Navigable Waters Act 1971 was to enable the U.K. to bring into force the 1969 Amendments to the 1954

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228. Limited to £400 on summary conviction, but unlimited following conviction on indictment. S. 28(1).

229. S. 28(1)(c)(i).

230. S. 29(2). This Act is also similar to the Acts already discussed in that it contains provisions for piercing the corporate veil (S. 29(4)), prosecution may occur anywhere in the U.K. (S. 29(1)), and it is a defence for the accused to prove that he used due diligence to comply with his legal obligations (S. 29(5)).

231. See p. 322.

IMCO Convention in respect of British ships.[232] It will be recalled that the 1969 Amendments will replace the permissible oil discharge standards for vessels, substituting an allowable quantity per mile formula for the present allowable quantity as an element of effluent discharged.[233] The Bill which became the Oil in Navigable Waters Act 1971 was modified during its passage through Parliament to include a Shipping Casualties section. The new provisions were intended to implement the 1969 IMCO Intervention Convention.[234] This discussion of the Prevention of Oil Pollution Act will first describe the provisions contained therein which prohibit oil pollution, whether intentional or accidental, caused by vessels engaged in activities which are more or less normal (for example, ballasting, terminal operations, etc.). The Shipping Casualties section, concerned with preventing oil pollution on a large scale following an "accident" such as that which occurred in the case of the *Torrey Canyon*, will then be analysed.

S. 1 prohibits the discharge of certain oils or oily mixtures[235] from British ships into the sea outside U.K. waters unless that discharge is exempted by regulation. Regulations enacted pursuant to S. 1 authorise discharges as permitted by the 1969 Amendments--the

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232. *Hansard*, H.L. Vol. 316, col. 190, 11 March 1971.

233. See discussion above, at p. 156.

234. The Intervention Convention is discussed above, at p. 188.

235. "Oily mixture" includes oil mixed with any other substance. S. 29(2). The oils to which S. 1 applies include crude, fuel and lubricating oil, as well as such heavy diesel or other oil as may be included pursuant to regulation. The Oil in Navigable Waters (Heavy Diesel Oil) Regulations (1967 No. 710) define heavy diesel oil for the purposes of S. 1 of the Act. This implements Article I(1) of the 1954 IMCO Convention.

quantity of oil per mile travelled formula.[236] The definition of terms used in the Act promotes comprehensive regulation: "ship" includes every description of vessel used in navigation not propelled by oars,[237] and "discharge" (with one exception) includes "escape."[238] On the other hand, there is the usual exception for Government ships which limits the Act's effectiveness[239] and since S. 1 implements the 1969 Amendments, the definition of oil in this Section is limited to that of the 1954 IMCO Convention.

S. 2 is concerned with discharges within U.K. waters.[240] It is an offence to discharge oil of any description[241] into U.K. waters

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236. The Oil in Navigable Waters (Exceptions) Regulations (1972 No. 1928), in force 5 January 1973. This implements Article III of the 1969 Amendments to the 1954 IMCO Convention.

237. S. 29(6); Merchant Shipping Act 1894, S. 742.

238. S. 29(3). The exception is contained in S. 11 which distinguishes between discharges and escapes, exempting the former from the duty imposed by that section to report the introduction of oil into harbours. The 1954 IMCO Convention definition of "discharge" also includes "escapes." Article I(1) of the Convention.

239. S. 24(1). "Government ships" has the same meaning as in S. 80 of the Merchant Shipping Act 1906: "ships not forming part of His Majesty's Navy which belong to His Majesty, or are held by any person on behalf of or for the benefit of the Crown and for that reason cannot be registered under the principal Act." S. 24(3). The exception for naval ships has caused concern that administrative procedures to prevent oil pollution from R.N. vessels may be inadequate. A recent oil spill from a Royal Fleet auxiliary vessel caused widespread pollution in Nigg Bay and Udale in Scotland, yet authorities could not apply the Act. *The Scotsman*, 21 November 1975, p. 6.

240. In the case of *Rankin v. De Coster*, reported in *The Times* (14 February 1975, p. 4), it was held that the waters within a dry-dock can properly be called waters "navigable by sea-going ships" for the purposes of Section 2 of the Prevention of Oil Pollution Act.

241. Including spirit produced from oil of any description and coal tar. S. 29.

from a vessel, a place on land,[242] or as a result of seabed operations. S. 2 is thus broader than S. 1: it prohibits the discharge of *any* kind of oil in *any* amount by ships of *any* registration, as well as oil discharged from land. The wider scope of S. 2 is possible because H.M.G. can exercise more extensive jurisdiction within her territorial sea than is possible on the high seas, although it remains subject to the right of innocent passage.

The present law of innocent passage is unclear and depends very much on the facts of each claim.[243] One measure of how reasonable S. 2 is in relation to other users of the sea is to compare it with the claims of other States. The Canadian Arctic Waters Pollution Prevention Act is also legislation intended to protect coastal waters from marine pollution.[244] The Canadian Act, however, asserts jurisdiction to control navigation within a zone 100 miles from Canadian land; by comparison, the three-mile claim to apply British law prohibiting oil pollution seems modest indeed. Nor, to take a less extreme and less protested example, does S. 2 challenge the right of innocent passage to the extent of the U.S. Ports and Waterways Safety Act which provides for the unilateral establishment of safety standards

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242. "Place on land" includes anything resting on the bed or shore of the sea, or of any other waters to which this section applies, and also includes anything afloat (other than a vessel) if it is anchored or attached to the bed or shore of the sea or of any such waters." S. 2(3). This broad definition would appear to include installations or devices not directly engaged in seabed activity, such as marine oil storage tanks or offshore tanker loading and unloading facilities so long as they are located in U.K. waters.

243. See the discussion of the UNCLOS III RSNT concept of innocent passage, above at p. 197.

244. The Arctic Waters Pollution Prevention Act is briefly described above, at p. 116.

for all vessels entering U.S. waters.[245] The powers claimed by S. 2 of this Act appear reasonable by comparison; they have also been exercised in a reasonable manner.

Ss. 1 and 2 are the key provisions of the Prevention of Oil Pollution Act in respect of vessel-source oil pollution control. The success or otherwise of these two Sections in preventing oil pollution depends, however, on ancillary provisions which enable their implementation as well as upon their own terms. It is useful, therefore, to consider Sections of the Act which support Ss. 1 and 2.

The owner or master[246] of a vessel charged with an offence

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245. Pub. L. No. 92-340, 33 U.S.C. §§ 1221-1227 (1974 Supp.). The Ports and Waterways Safety Act of 1972 provides that vessel traffic systems *may* be established to control all vessels in U.S. waters, and that regulations *shall* be made setting minimum construction standards for tankers entering U.S. waters. Such regulations have not yet been made to apply to foreign vessels, but following the *Argo Merchant* and other flag of convenience spills near the U.S., support for such regulations is growing. *New York Times* editorial, reprinted in the *International Herald Tribune*, 7 January 1977, p. 4.

246. The case of *Federal Steam Navigation Co. v. Department of Trade and Industry*, 1 W.L.R. 505 (H.L.) (1975) held that a prosecution of "owner or master" under the Act authorised the prosecution of both. See the Comment on this case by Collins, L., in 33 *Cambridge Law Journal*, pp. 181-186 (1974). There are differing views on holding the master liable. Mr. Dickens thinks that since a master is not likely to be able to pay a maximum fine of £50,000 from his own funds, the Act is really aimed at obtaining this compensation from the company. He questions the propriety of using criminal penalties against the master to reach the actual intended defendant. Dickens, B., "Law Making and Enforcement - a Case Study," 37 *Modern Law Review* 297-307 (1974). Col. Sulivan asserts that the policy at Milford Haven is to prosecute the owner only. If the master is fined (with or without the prosecution of the owner) this may set an unfortunate precedent. Should the occasion arise in which only the master were subject to U.K. jurisdiction, the defence could persuasively argue that the amount of the fine levied upon the master (for example, £1,000) was the limit of the master's ability to pay and the absence of the owner was irrelevant. Moreover, the assertion that the shipowner ultim-

under either S. 1 or S. 2 may escape liability for the high fines possible under those provisions[247] if he can prove that the discharge was reasonably necessary to secure the safety of any vessel, or to prevent damage to any vessel or cargo, or to save life.[248] The

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ately pays is incorrect in most cases; as a general rule, the cost of a fine is borne by Protection and Indemnity Clubs. Thus, at Milford Haven, a master would only be prosecuted if the owner could not be brought within the court's jurisdiction. Conversation with Col. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976. The Department of Trade policy is to consider each case on its particular merits, weighing, for example, the master's ability to pay and availability of the owner in making their decision. Letter from Mr. J. Clayton, Department of Trade, 9 July 1976.

247. Article VI(2) of the 1969 Amendments requires each Party to provide penalties "adequate in severity" to discourage unlawful discharges, such penalties not to be less on the high seas than in the territorial sea. Thus, the maximum fine possible on summary conviction under both Sections is £50,000; the fine is unlimited following conviction on indictment. Ss. 1(4), 2(4). The maximum fine was raised from £1,000 in the Oil in Navigable Waters Act 1955 to the present limits by the Oil in Navigable Waters Act 1971. The drastic increase and the vesting in magistrates courts a power to implement fines of this magnitude was prompted by several M.P.'s who were concerned that a smaller maximum fine would be ineffective in deterring discharges by wealthy corporations. It was necessary to vest the required power in a court of summary jurisdiction because extended proceedings would permit a person accused of an offence under the Act to sail beyond the court's jurisdiction. As for objections to the possible maximum penalty, it was pointed out that the fine imposed could be much less. It was, however, necessary to provide a high maximum because, pursuant to S. 20(2) of the Act, a court could order the whole or a part of the fine to be paid to compensate for pollution damage or removal. *Hansard*, H.C. Vol. 805, cols. 579 *et seq.*, 30 October 1970; Vol. 809, cols. 197 *et seq.*, 13 January 1971; H.L. Vol. 315, cols. 50 *et seq.*, 9 February 1971; H.C. Standing Committee D, cols. 42 *et seq.*, 17-19 November 1970. Col. Sulivan has commented on the difficulty of serving summons upon foreign masters in view of the S. 18(7) provision that a vessel may not be "unnecessarily detained." In Milford Haven more than 20% of the cases against foreign vessels have had to be dropped because the ship departed before the master could be served. Sulivan, J., *op. cit.* in footnote 2, above, at p. 140.

248. S. 5(1); 1969 Amendments, Article IV.

importance of safety considerations is indicated by the breadth of language employed in this defence: it is not required that the vessel or cargo sought to be protected be under the ownership or control of the defendant. It is also a defence to liability under Ss. 1 and 2 to prove that an *escape* resulted from vessel damage, and that as soon as practicable after the damage occurred all reasonable steps were taken to prevent (or if this were not possible, to stop or reduce) the escape.[249] Liability for oil discharges from vessels is thus based on fault rather than being strict or absolute.

The Secretary of State is empowered to make regulations for the purpose of preventing or reducing discharges of oil from vessels.[250] Pursuant to this power, regulations have been made requiring all British ships using fuel oil for engines or boilers to be fitted so as to prevent that oil from entering the bilges[251] and requiring certain British non-tankers which use their bunker fuel tanks for ballast

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249. S. 5(2)(a). Similarly, it is a defence to prove that an escape resulted from leakage and that neither leakage nor delay in discovering it resulted from want of reasonable care and that as soon as practicable after discovery, all reasonable steps to stop or reduce the escape were taken. S. 5(2)(b).

250. S. 4. This Section also contains provisions for testing such equipment as may be prescribed and provides that the owner or master of a ship which contravenes any regulation made under that Section is guilty of an offence. The maximum fine on summary conviction is £1,000--only one-fiftieth of that permissible for offences involving direct discharges. A spokesman for H.M.G. explained in Parliament that the two cases were distinguishable because under S. 4 only British ships were affected. Thus, trial could easily be upon indictment in which case the possible fine was unlimited. *Hansard*, H.L. Vol. 809, col. 199, 13 January 1971. This explanation ignores the possibility of applying S. 4 to foreign ships pursuant to the power vested in the Secretary of State under S. 22.

251. The Oil in Navigable Waters (Ships' Equipment)(No. 1) Regula-

water to be fitted with an oily water separator.[252] By Order in Council, such regulations may also be applied to foreign ships,

> "when they are in a harbour in the United Kingdom or are within the seaward limits of the territorial waters of the United Kingdom while on their way to or from a harbour in the United Kingdom."[253]

This power, similar to that authorised by the U.S. Ports and Waterways Act, has not yet been exercised.[254] Authority to prescribe construction standards, even if limited to pollution prevention equipment, can impose far more severe economic penalties upon shipowners than the fines possible under S. 2. Construction and equipment standards affect the vessel regardless of geographic position. In addition to purchase, installation and maintenance costs of required equipment, there may well be a loss of cargo space, and an increase in the weight of the vessel at the expense of payload and fuel consumption.

Sections 8 to 11 of the Act regulate vessel-source oil pollution in U.K. harbours.[255] Sections 8 and 9 deal with the disposal of ballast water and oil residues; they are thus important provisions in the general scheme of marine pollution prevention. As one author-

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tions (1956 No. 1423). This implements the requirement of Article VII(1) of the Convention as amended in 1969.

252. The Oil in Navigable Waters (Ships' Equipment) Regulations (1957 No. 1424); Article VII(2) of the amended Convention provides that "(c)arrying water ballast in oil fuel tanks shall be avoided if possible."

253. S. 22(1) of the Act.

254. As a major maritime nation, the U.K. has been cautious in infringing real or believed freedoms of navigation because of possible retaliation.

255. A U.K. harbour is a port, estuary, haven, dock, or other place which contains U.K. internal or territorial waters and

ity has observed,

> "one of the strongest inducements to mariners to dump oily residues unlawfully into the sea is known to be their fear of incurring the displeasure of their owners if they lose time or involve their ship in expense by using facilities in port .... ."[256]

Provisions which encourage compliance with standards set by law are to be encouraged because enforcement of pollution prevention law is both expensive and fraught with practical difficulties.

S. 8 empowers a harbour authority[257] to designate an area within his jurisdiction[258] in which ballast water from vessels which have carried petroleum spirit[259] may be discharged. The cargo last carried is limited to petroleum spirit because it quickly evaporates

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where by enactment vessels may be charged for entry or use of facilities. S. 8(2). This definition would exclude SBMs and other offshore terminals outside territorial waters.

256. Counsellor Gunnar Böös, Chairman of the Nordic Union for the Prevention of Oil Pollution of the Sea, quoted in *Hansard*, H.C. Vol. 809, col. 161, 13 January 1971.

257. "Harbour authority" means a person or body empowered by an enactment to levy charges against vessels entering U.K. harbours or using facilities therein. S. 8(2). "Enactment" includes a local enactment, and "charges" means any charges excepting certain specified levies for navigational aids. S. 8(2). The legal framework of S. 8 makes it possible for a local enactment to empower a person with the authority to levy charges against vessels, thus constituting him as a harbour authority. In the absence of statutory guidelines on discharges, it is conceivable that the self-interest of a local resident appointed to be harbour authority might tempt him to set very relaxed standards for the vessels on which community welfare may to a greater or lesser extent depend.

258. A harbour authority's "area of jurisdiction" is expressly delimited in the provisions defining his particular authority. Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976.

259. "Petroleum spirit" has the meaning set out in the Petroleum (Consolidation) Act 1928: "Petroleum-spirit means such

from the surface of the water and is therefore unlikely to foul the coastline or floating objects.[260] This reasoning is accurate but insufficient: clean beaches and unfouled floating objects merit legal protection, yet cannot the same be said of marine life in harbours? To reiterate an observation made in Chapter Two, although refined spirits evaporate more quickly than heavier fractions, they are far more damaging to marine life. If a spill of refined spirits occurs in shallow, enclosed, or sheltered waters near shore, the destruction of marine life is so swift that there is little that can be done to remedy the situation.[261] It is recognised that ballast must be discharged somewhere, and preferably as near to the place where cargo will be loaded as possible;[262] however, a "least cost" solution of allowing even limited discharges in harbours would be computed at considerable expense to the environment. This provision, thought by one authority not to be used anyway, ought to be removed from the Act.[263]

S. 9 empowers the harbour authority to provide oil reception facilities for the deposit of oil residues from vessels using the

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petroleum as when tested in the manner set forth in Part II of the Second Schedule to this Act gives off an inflammable vapour at a temperature of less than 73 degrees Fahrenheit."

260. *Hansard*, Standing Committee A, col. 33, 29 March 1955.

261. Clark, R., "The Biological Consequences of Oil Pollution of the Sea," in *Water Pollution as a World Problem*, Europa Publications Ltd., London (1970), pp. 53-73, at p. 63; Sulivan, J., *op. cit.* in footnote 2 , at p. 141.

262. See the discussion of ballasting in Chapter Two.

263. Col. Sulivan has observed that such discharges would not be permitted at Milford Haven or any other harbour in the U.K. Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976.

harbour. Such facilities are open to all vessels except tankers or ships needing to discharge effluent prior to undergoing repairs. The Government reasoned that facilities for tanker discharges should be provided by the receiving oil company and vessel repair firms should likewise include them as part of the repair yard.[264] Vessels wishing to use oil reception facilities in a U.K. harbour must pay for the service: an Amendment to the Act which would have provided such facilities free of charge was not accepted because it was thought that only those vessels which benefitted should be assessed charges.[265] H.M.G.'s attitude toward the provision of oil reception facilities appears to have been shaped to a considerable extent by the conflicting forces of environmental and amenity protection versus short-term economic considerations.

On the one hand, the Secretary of State is empowered to direct the harbour authority to arrange for oil reception facilities if the Secretary of State finds such facilities to be either inadequate or lacking and needed.[266] Failure to comply with the Secretary of State's

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264. *Hansard*, H.L. Vol. 190, col. 867, 1 February 1955; S. 8(6).

265. *Hansard*, H.L. Vol. 190, col. 867 *et seq.* 1 February 1955.

266. S. 9(5). The Secretary of State must first consult with the harbour authority and any organisation appearing to the Secretary of State to be representative of owners of ships registered in the U.K. (In practice, this has meant the General Council of British Shipping. Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976.) The Department of Trade is currently conducting a study to determine the need for oil reception facilities in U.K. harbours, who will pay for their construction, and who must provide them. Advisory Committee on Oil Pollution of the Sea, *Annual Report* (1975), p. 7. No directions to harbour authorities have been issued pursuant to this Section. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976.

direction is an offence for which the harbour authority may be fined.[267] These provisions are consistent with Parliamentary discussion emphasising the importance of oil reception facilities in a scheme of oil pollution control.[268]

On the other hand, the provisions exempting tankers and vessels preparing to undergo repairs, plus the notion that some vessels "benefit," certainly do not indicate concern that such facilities be so convenient that the alternative of ocean discharge is unattractive. Two questions may be asked: 1) Who really benefits from oil reception facilities, the vessel operator or the public in whose interest Government presumably acts? 2) To what extent does the Act fulfil obligations to provide such facilities imposed upon H.M.G. by the 1954 IMCO Convention?

Article VIII(1) of the Convention provides that:

> "(1) Each Contracting Government shall take all appropriate steps to promote the provision of facilities as follows:
>
> .....
>
> (b) oil loading terminals shall be provided with facilities adequate for the reception of such residues and oily mixtures as would similarly [i.e., with the bulk of water separated from the mixture] remain for disposal by tankers;
>
> (c) ship repair ports shall be provided with facilities adequate for the

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267. S. 9(8). This unusual coercive measure could subject the harbour authority to a possible maximum fine of £10 for each day of default.

268. In 1954 a Government spokesman had described the encouragement of oil reception facilities in port as the most important purpose of the Oil in Navigable Waters Act 1955. *Hansard*, H.L. Vol. 190, cols. 333-334, 14 December 1954.

> reception of such residues and oily mixtures as would similarly remain for disposal by all ships entering for repairs."

As emerges from the discussion, the vessels described in (b) and (c) are not covered by the Act. If H.M.G. has taken appropriate steps to promote the provision of facilities for tankers and ships destined for the repair yard it has been by informal arrangement with oil companies and repair yard operators. In fact, a recent survey by the General Council of British Shipping indicated that with some exceptions,[269] oil reception facilities in Great Britain are generally adequate.

S. 10 prohibits the transfer of oil at night to or from a vessel in a U.K. harbour unless advance notice is given to the harbour master or harbour authority. This provision, a common-sense precaution against spills, remains unchanged from the Oil in Navigable Waters Act 1922.[270] The master of a vessel contravening S. 10 is liable, but, unlike other Sections dealing with vessel violations, the owner is not.[271]

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269. Inadequate or non-existent facilities were recorded for the port areas of Avonmouth, Ardrossan, Barry, Felixstowe, Fleetwood, Harwich, Sharpness and Swansea. Advisory Committee on Oil Pollution of the Sea, *Annual Report* (1974), p. 8.

270. S. 2 of the 1922 Act. This provision, as well as others relating to control of pollution in harbours may have to be expanded to cover transfers of petroleum products at offshore terminals, from single point mooring buoys, and lightering operations. At present, no U.K. law regulates such transfer specifically.

271. The Petroleum Consolidation Act requires the Harbour Authority to enact bylaws. These bylaws deal with the relationship between the Harbour Master and the ship's master. This Act explains why only the master (not the owner) is liable for an offence under S. 10 involving the transfer of oil at night.

S. 11 provides for reporting of oil spills into U.K. harbours. The owner or master of a vessel from which oil is discharged or escapes must forthwith report the occurrence or be guilty of an offence. This provision in its present form resulted from a fatal accident caused by an unreported spill which subsequently caught fire.[272] As a result of that incident, *all* spills of *any* oil or oily mixture must now be reported.[273]

Those Sections of the Act which regulate discharges or escapes rely on Oil Record Books as a primary indication of compliance with their provisions. This is also the method of control employed by the 1954 IMCO Convention.

The Secretary of State is empowered to make regulations requiring that such Books be carried by U.K.-registered ships, and to promulgate regulations requiring all vessels to keep records of oil transfers while in U.K. waters.[274] The latter power was exercised in 1957 and requires the keeping of records for several details of oil transfers in U.K. waters.[275] In 1972 regulations were made

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Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976.

272. The accident occurred when a spill spread from a harbour into the adjacent Manchester Ship Canal. The spill was not reported and under the Oil in Navigable Waters Act 1955, the applicable Act at the time, there was no duty to report such incidents. The Oil in Navigable Waters Act 1971 included a duty to report spills in harbours so that warnings could be given and remedial action taken as quickly as possible. *Hansard*, Standing Committee D, cols. 76-77, 19 November 1971.

273. A person required to make a report under S. 11 who does not do so may be fined up to £200 following summary conviction.

274. S. 17.

275. The Oil in Navigable Waters (Transfer Records) Regulations

replacing an existing instrument in order to impose the oil record requirements of the 1969 Amendments to the IMCO Convention upon U.K. ships.[276] The new regulations require that records be kept of several operations involving tankers as well as for certain other vessels.[277]

Since enforcement (and therefore to a great extent, the effectiveness) of the Act depends very much upon accurate oil record books, detailed provisions are included which set out penalties for failure to comply with this scheme and the Secretary of State is empowered to appoint inspectors to ensure compliance as well.

If any ship is found not to carry an oil record book, the owner or master is liable on summary conviction to a fine not exceeding £500. "Any person" who does not comply with the requirements of the oil records Section is similarly liable. And, if any person knowingly falsifies any oil record book, he is liable on summary conviction to a £500 maximum fine, or imprisonment for a term not exceeding six months, or both. On conviction on indictment the fine is unlimited, imprisonment may be up to a term not exceeding two years, and either or both penalties may be imposed. The falsification penalty has been

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(1957 No. 358). The regulations apply to all vessels capable of carrying more than 25 tons of oil in bulk, whether for cargo or for bunker purposes.

276. The Oil in Navigable Waters (Records) Regulations (1972 No. 1929).

277. "'Tanker' means a vessel the greater part of the cargo space of which is constructed or adapted for the carriage of liquid cargoes in bulk and which is either carrying a cargo of oil in bulk in that part of its cargo space or has on board oil residues from a cargo of oil in bulk previously carried." (1972 No. 1929), S. 2(1). S. 4(1) of those regulations applies that instrument to other ships of 80 gross tons or more.

increased drastically from the provision of the Oil in Navigable Waters Act 1955 which provided only for summary conviction carrying a maximum penalty of six months imprisonment. The new provision for indictment was intended to promote compliance with the Act by the use of severe personal sanctions against an offender.[278]

The Secretary of State may appoint inspectors to audit compliance with the Act, to determine what measures have been taken to prevent the escape of oil, and whether oil reception facilities provided in harbours are adequate. The inspectors so appointed are the Department of Trade's own marine surveyors, although the Secretary of State retains the power to appoint other persons.[279] The powers to inspect specifically provided appear to contemplate such investigation exclusively while the ship is located in a U.K. harbour for there is no statutory mention of such powers within territorial waters or on the high seas. In practice, the Department of Trade follows up all allegations of offences when the vessel next calls at a U.K. port. Moreover, U.K. vessels in port are subject to general

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278. A master might look to the oil company or the ship owner to pay a fine for an offence which it was in their interest he commit. The penalty of imprisonment is not transferable. A suggestion that £1,000 be awarded to a person who reported an offence was not accepted. *Hansard*, H.C. Vol. 805, col. 597, 30 October 1970. The United States has such a *qui tam* provision in the Refuse Act [33 USC § 407 (1964), often referred to as the Rivers and Harbours Act.] This Act, dating from 1899, prohibits discharging refuse of any kind into navigable waters of the United States. An informer may receive one-half of the penalty of $500 to $2,500 upon conviction of the offender. After some years of neglect, the Refuse Act has been resurrected and pressed into service as an important legal control of marine oil pollution. See the comments of Haugh in "Approaches to Oil Pollution Responsibility: Oral Proceedings," 50 *Oregon Law Review* 587 (1971), at p. 591 *et seq.*

279. *Hansard*, H.C. Standing Committee D, col. 89, 19 November 1970.

inspections at irregular intervals and, although the general inspection is concerned primarily with safety, it is thought that the opportunity thus available to inspect the oil record book and other documents contributes to the general scheme of marine pollution control.[280]

S. 18(6) provides that the harbour master or the Secretary of State's appointee may, in respect of any vessel within a U.K. harbour,

1. Board and inspect the vessel,
2. Require the production of an oil record book,
3. Copy an oil record book.[281]

Inspection under this provision "shall not unnecessarily detain or delay the vessel from proceeding on any voyage." Both failure to produce an oil record book for inspection and wilful obstruction--as distinguished from merely being unable to produce the oil record book--which inhibits an inspection subjects the offender to a fine on summary conviction.[282]

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280. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976.

281. Under S. 21 an Order in Council may be made to empower U.K. inspectors to board any Convention ship while that ship is in a U.K. harbour, and to require production of any oil record book required by the Convention. The Oil in Navigable Waters (Enforcement of Convention) Order (1958 No. 1526) is based on this power. It is designed to check compliance with the 1954 IMCO Convention by Parties thereto in U.K. ports. In essence, it provides for production and copies of oil records and imposes a maximum penalty of £10 for failure to comply and £100 for wilful obstruction, the same fines which may be imposed upon U.K. ships. See Article IX of the amended Convention.

282. The fine for failure to produce an oil record book is limited to £10; the fine for wilful obstruction of enforcement by refusal to produce an oil record book may not exceed £100. S. 18(6). These penalties are intended to aid inspection; the small fine for failure to produce an oil record book covers a

As in other Acts described above, prosecutions for offences under this Statute are closely controlled by H.M.G.[283] Also in common with the legislation which has been discussed is the omission of any duty to prosecute. Since oil spills in harbours can, except with the consent of the Attorney General, only be prosecuted by the harbour authority, the omission is significant since a harbour authority may be reluctant to bring proceedings against the owners of ships whose dues provide the port's revenues.[284] Even when proceedings are commenced against an offender under the Act, problems of proof make

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situation in which there is an oil record book, but it cannot be located or is not on board. Although the higher fines and possible imprisonment sanctions of S. 17 would also apply if inspection revealed that an oil record book was not normally carried or that it had been falsified, a master faced with penalties under that Section might well elect to be fined £100 for wilful obstruction of an inspector and simply refuse to allow access to any evidence upon which a conviction under S. 17 could be based.

283. In England and Wales, prosecution for all offences may be brought only by or with the consent of the Attorney General, or by the harbour authority in certain cases pertaining to harbours, or by the Secretary of State or his designated representative, subject to some exceptions. S. 19. The harbour authority may prosecute:
    1. Discharges into a U.K. harbour (an offence under S. 2).
    2. Transfer of oil at night or reporting harbour discharges or escapes (offences under Ss. 10 and 11).
    3. Oil Record Book offences (under S. 17).
    4. Failure to comply with the harbour master's requirements or obstruction of the harbour master in the performance of his duties (under S. 18).

    The Secretary of State may not prosecute numbers 2, 3, and 4 in this list. S. 19(6) provides that an appropriately constituted and empowered sea fisheries committee (under the Sea Fisheries Regulation Act 1966) or sea fisheries officer may prosecute any offence committed within its district. The Sea Fisheries Regulation Act is only partially relevant to the North Sea as it does not apply to Scotland.

284. Sulivan, J.A., *op. cit.* in footnote 2, at p. 138.

conviction difficult.[285] Unless oil is actually observed being discharged from a stationary vessel, the oil record book, which may or may not be inspected when a vessel enters a U.K. harbour, constitutes the prosecution's only evidence.

The frequency of vessel inspections in U.K. harbours for the purpose of checking compliance with the oil record requirements of the Act has been a source of some concern among those individuals and organisations interested in the prevention of marine oil pollution. In 1972 the Secretary of State assured the Advisory Committee on Oil Pollution of the Sea that "proper action was now being taken to inspect boats arriving in ports and to institute prosecutions where there was firm evidence that a ship had not complied with the law."[286] H.M.G. does not emphasise detection of vessel-source pollution at sea because of the practical difficulties involved. The Department of Trade has issued instructions to masters of all ships flying the British flag to report discharges or escapes of oil pollution, and the Department of Energy has requested similar information from offshore operators.[287] There is, however, no provision for staff and equipment to monitor vessel-source pollution at sea as a primary function.[288]

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285. This is especially true where an oil spill occurs in a harbour: the oil must be removed immediately before it reaches the nearby shore and in consequence, there is little time for police work. Voluntary cooperation is of particular importance because the application of sanctions in such situations is just not practicable. *Ibid.* at p. 141.

286. Advisory Committee on Oil Pollution of the Sea, *Annual Report* (1972), p. 4.

287. Continental Shelf Operations Notice No. 7, June 1972.

288. In the U.S., the Coast Guard is responsible for such monitoring and have developed sophisticated equipment to aid them in their

Finally, it is of interest to note that the level of fine imposed has been much less than the maximum permitted, a situation which has caused some concern.[289] It may well be that, at least in the case of vessels calling at U.K. ports, the interests of the parties are close enough so that the system of "cooperative" enforcement favoured by some[290] is as effective as a more legalistic approach.

Ss. 12 to 16 of the Prevention of Oil Pollution Act constitute a discrete section entitled "Shipping Casualties." The provisions concerning shipping casualties were not originally part of the Oil in Navigable Waters Act 1971, nor, for that matter, were any such powers provided for in any British law. Although the *Torrey Canyon* grounding off Cornwall had resulted in the conclusion of the Intervention Convention described above,[291] H.M.G. had not thought it necessary to enact enabling legislation in order to ratify the Convention.[292] Two accidents which occurred during Parliamentary debate of the Oil in Navigable Waters Bill caused H.M.G. to reconsider the need for enabling legislation and to include the shipping casualties provisions in the Bill which became the Oil in Navigable Waters Act 1971. Because the

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task. One such aid is an electronic airborne sensing system which can detect oil slicks at night and in bad weather. In tests the system proved effective, even detecting slicks from drilling rigs in the Santa Barbara Channel. In 1975, the system resulted in the conviction of two offenders. U.S. Coast Guard, *Environmental Protection Newsletter*, Vol. 2, No. 1; Mills, B., "Coast Guard Airborne Remote Sensing System," pp. 7-12; *Ibid.*, Vol. III, No. 1, "AOSS Extends Pollution Patrol Capability--Airborne Remote Sensors Prove Effective in All Weather," p. 16.

289. ACOPS, *op. cit.* in footnote 286, at pp. 3-5.

290. See Sulivan, J.A., *op. cit.* in footnote 2.

291. See p. 188.

292. *Hansard*, H.L. Vol. 315, col. 50, 9 February 1971.

problems actually or potentially presented by the two accidents relate directly to the provisions included in the Act, they will be described briefly.

On 23 October 1970, the Liberian-registered tankers *Allegro* and *Pacific Glory* collided outside the U.K. territorial sea off the Isle of Wight. The *Pacific Glory* caught fire, was abandoned with loss of life, and ultimately settled, partially submerged, on a shingle bank four miles off the coast. The British Government and the salvage company cooperated in freeing the vessel and although oil had escaped from a ruptured cargo tank, the resulting slick was quickly dispersed.[293] Although the *Pacific Glory* accident had occurred outside U.K. waters, H.M.G. still believed that enabling legislation to implement the Convention was unnecessary as customary law conferred such powers. The potential problem was, in the view of the Government, a similar accident within U.K. waters. Despite U.K. sovereignty over her territorial sea, it was decided that authority to intervene in cases of vessel casualties should be extended to that area by Statute. An amendment to the Oil in Navigable Waters Bill was therefore introduced which was intended to give the Secretary of State authority to deal with shipping casualties occurring within U.K. jurisdiction.[294]

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293. *Keesing's Contemporary Archives*, 25347 B, July 1-8, 1972, Volume XVIII, 1971-1972, Keesing's Publications Ltd., London; *The Times*, 24 October 1970, p. 1; 26 October, p. 1; 27 October, pp. 1 and 9; 28 October, pp. 1 and 7; 29 October, p. 1; 30 October, p. 5; 31 October, p. 1. TOVALOP paid a U.K. Government claim of $800,000 for costs incurred to clean up the spill. Shell Briefing Service, "Oil spills offshore - compensation and remedies," (January, 1976), at p. 3.

294. The Shipping Casualties Section was introduced as an Amendment to the Oil in Navigable Waters Bill in the House of Lords on 9 February 1971, and after debate, it was accepted and the Bill

On 30 March 1971, the *Panther* grounded just outside U.K. territorial waters. As in the *Pacific Glory* case, she was quickly attended to, but in this instance difficulties were encountered in the attempts to free the stranded tanker and relations between the Government and the salvor became strained. The first salvor to reach the scene refused offers from competitive tugs despite the fact that his own tugs could not free the *Panther*. Some oil from the stricken vessel was transferred to a smaller tanker, but only after Government pressure was exerted was a second relief tanker brought alongside and the load sufficiently lightened to allow the *Panther* to be freed.[295] The difficulties encountered by H.M.G. in attempting to expedite the freeing of the *Panther* resulted in an expansion of the shipping casualties amendment to include powers to intervene with accidents to vessels not only within U.K. waters, but on the high seas as well.[296]

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as amended was sent to the House of Commons. Although the *Pacific Glory* accident had occurred outside U.K. waters, H.M.G. were concerned that should a shipping casualty take place within the three-mile limit, without this amendment there would be no clear authority empowering the Government to deal with the situation. *Hansard*, H.L. Vol. 315, col. 58, 9 February 1971.

295. *Keesing's Contemporary Archives, loc. cit.* in footnote 293; *The Times*, 31 March 1971, p. 1; 1 April, pp. 1 and 2; 2 April, p. 2; 3 April, p. 1; 5 April, p. 1; 7 April, p. 2; 15 April, p. 2.

296. H.M.G. introduced an Amendment in the House of Commons to extend the Shipping Casualties Section to shipping accidents which occurred outside U.K. waters. *Hansard*, H.C. Vol. 815, col. 638, 7 April 1971. The Amendment was accepted and sent to the House of Lords, where it met a stormy reception. Lord Kennet observed that the new Amendment indicated that H.M.G.'s previous contention that the U.K. had inherent powers to deal with accidents to vessels on the high seas if a threat of oil pollution damage to the U.K. resulted now seemed less credible. The Bill was

The Secretary of State may exercise the powers conferred upon him under the Shipping Casualties Section when:

1. "An accident has occurred to or in a ship;[297] and

2. In the opinion of the Secretary of State oil from the ship will or may cause pollution on a large scale in the United Kingdom or in the waters in or adjacent to the United Kingdom up to the seaward limits of territorial waters; and

3. In the opinion of the Secretary of State the use of the powers conferred by this section is urgently needed."[298]

The prerequisites to the exercise of Governmental power are similar to those specified in Article I(1) of the Intervention Convention, but they are not identical.

The Act refers to an "accident," the Convention to a "maritime casualty."[299] "'Accident' includes the loss, stranding, abandonment of or damage to a ship,"[300] whereas "'Maritime casualty' means a collision of ships, stranding or other incident of navigation, or other occurrence on board a ship or external to it resulting in material damage or imminent threat of material damage to a ship or cargo."[301]

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also condemned as "panic legislation" which would abolish freedom of the seas at a stroke. Despite these remarks, the House of Lords passed the Oil in Navigable Waters Bill as amended. *Hansard*, H.L. Vol. 317, cols. 417-18, 8 April 1971.

297. Although S. 16(4) of the Act exempts naval and Government ships from the Secretary of State's authority to direct or to take action, H.M.G. possesses such powers in respect of such U.K. vessels in any event. *Hansard*, H.L. Vol. 314, col. 1195, 28 January 1971.

298. S. 12.

299. S. 12(1)(a); Intervention Convention, Article I(1).

300. S. 12(9).

301. Article II(1).

Neither definition is unambiguous, but the unexplained[302] narrowing of "maritime casualty" to "accident" may pose an unnecessary and important problem: is the Secretary of State authorised to give directions or to act if the threatened injury results from an occurrence on board the vessel--for example, a defective valve which allows oil to leak into the sea--which is not the result of "damage" and is clearly not the loss, stranding or abandonment of the ship? The Convention expressly covers this situation; the Act does not. Were such a situation to occur and the question of whether a leaking valve was an accident the only impediment to the exercise of powers under the Shipping Casualties Section, it is unlikely that the ambiguity would bar action by the Secretary of State. Prevention of pollution on a large scale is too important. A possible *ex post facto* justification of intervention in this hypothetical case could be an argument that while the plain meaning of "accident" might exclude discharges from a faulty valve, the definition of "accident" in the Act was effected by a list of situations which was illustrative rather than exhaustive.[303]

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302. "Accident" appeared in the Lords' amendment which added the Shipping Casualties Section and was unchallenged in either House. *Hansard*, H.L. Vol. 315, cols. 47 *et seq.*, 9 February 1971.

303. The plain meaning of "accident" is wide enough to encompass the escape of oil from a faulty valve. Thus, one dictionary states: "In its most commonly accepted meaning, or in its ordinary or popular sense, the word may be defined as meaning a fortuitous circumstance, event, or happening, an event happening without any human agency, or if happening wholly or partly through human agency, an event which under the circumstances is unusual and unexpected by the person to whom it happens .... ." *Black's Law Dictionary*, (Fourth Ed.) West Publishing Co., St. Paul (1966), p. 30. The distinction between "accident" and "casualty" has not caused problems. Letter to the writer from Mr. J. Clayton, 9 July 1976. The Shipping Casualties section has not yet been applied.

Although the problem may not occur in practice, the possibility would not even arise had the Act employed the language of the Convention.[304]

The second criterion requires pollution on a large scale, similar to the language of the Convention which speaks of "a casualty which may reasonably be expected to result in major harmful consequences."[305] Both terms are undefined, and though this poses potential interpretation problems, some sort of limit to Governmental discretion to intervene appears so important that omission of this qualification would invite far more serious conflict.[306] This reasoning also accounts for the criterion of "urgent need" in the Act and "necessary to prevent, mitigate or eliminate grave and imminent danger" in the Convention.[307]

A final and important difference between the provisions which authorise intervention in the Act and similar sections of the Convention concerns the interests to be protected. The Convention provides that action may be taken to "prevent, mitigate or eliminate grave and imminent danger to their coastline or related interests."[308] "Related interests" are enumerated in Article II(4).[309] The Act contains no

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304. The Marine Environment Protection Committee of IMCO is preparing a manual of guidelines to follow when considering intervention under the Convention. MEPC III/WP. 7.

305. Article I(1).

306. The Government was influenced to some degree by a fear of reprisals to British shipping authorised by similarly unqualified conferrals of powers. *Hansard*, H.C. Vol. 815, col. 636, 7 April 1971.

307. S. 12(1)(c); Intervention Convention, Article I(1).

308. Intervention Convention, Article I(1).

309. The "related interests" are described in connection with the discussion of the Intervention Convention, above at p. 191.

such indication of what interests it is intended to protect, an omission which deprives the Secretary of State of guidance in taking decisions to protect different uses of the sea, such as recreation or commercial oyster fishing.[310] This omission allows the Secretary of State great discretion, but is open to possible abuse.

Satisfaction of the three criteria just discussed activates a two-tiered Secretarial power: the Secretary of State may give directions to the master, owner or any person, salvor or salvor's agent in possession of the ship for the purpose of preventing oil pollution. But, if in his opinion action is necessary, he may:

1. Actually do anything which, were he merely giving directions, he could have directed be done, for example, the Secretary of State could engage relief tankers to receive oil from the stricken vessel;

2. Sink or destroy the ship,

3. Assume control of the ship.

These powers are counterbalanced by a right given to a person damaged as a result of the Secretary of State's action to recover compensation if such action was unreasonable or disproportionate to the injury which did, or was likely to, occur.[311] In considering

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310. Sibthorp, M. (ed.), *op. cit.* in footnote 24, at p. 38. This view is shared by Forster, M., "The Prevention of Oil Pollution Act 1971," 21 *International and Comparative Law Quarterly* 771-774 (1972), at p. 772.

311. "Disproportionate" injury is required so that the "claimant has to show that he suffered damage on an altogether different scale of magnitude from the good which was or might have been, achieved by the action." *Hansard*, H.L. Vol. 315, col. 1199, 25 February 1971.

whether this section applies, account must be taken of,

1. The extent and risk of oil pollution if the action had not been taken,

2. The likelihood of the action being effective,

3. The extent of the damage which has been caused by the action.[312]

As the Secretary of State has not had occasion to use the powers authorised under the Shipping Casualties section of the Act, interpretation of these provisions must be unassisted by practical experience.[313]

S. 14 provides that it is an offence to contravene or fail to comply with any direction given by the Secretary of State or to wilfully obstruct the implementation of such direction. Two statutory defences are provided whereby the accused may escape liability if he proves,

1. that he has used all due diligence to comply with the direction, or

2. that he reasonably believed that compliance with the direction would have involved a serious risk to human life.

The £50,000 maximum fine on summary conviction and unlimited fine on conviction on indictment is identical to the penalty imposed for discharges from vessels and seabed operations because "a discharge of oil as a result of wilful refusal to obey a direction is essentially the same as a deliberate discharge."[314]

The Amendment to the Shipping Casualties Section introduced as

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312. S. 13(2).

313. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976.

314. *Hansard*, H.L. Vol. 315, col. 51, 9 February 1971; H.C. Vol. 815, col. 619, 7 April 1971.

a result of the *Pacific Glory* and *Panther* accidents became S. 16 of the Act. Pursuant to this provision, the Secretary of State may, by Order, give directions or take action in respect of a ship,

1. which is not a ship registered in the U.K., and
2. which is outside U.K. territorial waters.

It was intended to use the flexible Order procedure to permit selective application of the extraordinary powers authorised to specific problem areas, such as oil tankers in the English Channel,[315] but the Order which has been made under S. 16 of the Act is sweeping.[316] The Shipping Casualties Section of the Act is applicable to foreign-registered vessels outside U.K. waters. The power to give directions and the offence of obstruction is restricted to U.K. citizens or corporations, but the Secretary of State's authority to take action is unqualified.

The validity of the Shipping Casualties Section of the Act under international law may be questioned both in respect of its application to vessels within U.K. territorial waters and those on the high seas. The issue in respect of foreign vessels within U.K. territorial waters is whether or not action under the Shipping Casualties Section would constitute an illegal interference with the right of innocent passage. The Intervention Convention does not apply to territorial waters;

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315. *Hansard*, H.C. Vol. 815, col. 620, 7 April 1971; H.L. Vol 317, col. 415, 8 April 1971. An Order made pursuant to this provision is subject to the annulment procedure, which means that it will not come into force without there being an opportunity of further debate in both Houses of Parliament. *Hansard*, H.C. Vol. 815, col. 621, 7 April 1971; H.L. Vol. 317, col. 415, 8 April 1971.

316. The Oil in Navigable Waters (Shipping Casualties) Order (1971 No. 1736), in force 22 November 1971.

one must therefore look to international customary law.

Under present international law foreign vessels may not be prevented from passing through the territorial sea unless such passage would be prejudicial to the peace, good order or security of the coastal State.[317] A foreign vessel threatening oil pollution damage to a coastal State could be described as posing a threat to that State's "environmental security," but it is at present uncertain whether "environmental security" is a protectable interest recognised by international law. One may cite such evidence as State legislation to support the argument that the concept of "environmental security" is becoming increasingly recognised as a legally protectable interest. For example, the Canadian Arctic Waters Pollution Prevention Act and the U.S. Ports and Waterways Act noted above[318] both arguably infringe the traditional doctrine of freedom of the seas, as does the Water Quality Improvement Act of 1970 which empowers U.S. authorities to summarily remove or destroy a polluting vessel located in U.S. waters.[319]

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317. Territorial Sea Convention, Article 14(4). Such passage must conform to other Articles of that Convention and other rules of international law. *Cf.* the proposals in the UNCLOS III RSNT described above at p. 196.

318. See above, at p. 245.

319. Pub. L. No. 91-224, 84 Stat. 93-94 (1970). See Cundick, R., "High Seas Intervention: Parameters of Unilateral Action," 10 *San Diego Law Review* 514-558 (1973). The Milford Haven Conservancy Act 1975 confers powers similar to the Shipping Casualties Section of this Act upon local authorities in respect of vessel-source pollution. S. 14 of the Conservancy Act confers upon the Conservancy Board the right to give directions or take action in respect of a vessel in the haven if it is necessary to prevent pollution. There is no "accident" or "casualty" requirement, and "pollution" is not limited to that caused by oil. S. 15 authorises the harbourmaster to "board

A second factor suggesting acceptance as customary law is absence of protest by those States especially interested. Although the caveat of the majority in the *Lotus* case on the inference of *opinio juris* from absence of protest is particularly apposite in the case of a claimed power which has not been used, it is submitted that the British claim is reasonable, and so long as it is exercised in a reasonable manner in good faith, an international tribunal such as the I.C.J. would not find British action inconsistent with international law.

The question of legality *vel non* under international law in respect of accidents to foreign vessels outside U.K. waters has generated considerable comment. There are two main sub-problems: 1) Is the Act consistent with the Intervention Convention? 2) Can the Act be applied to vessels flying the flag of a State not a party to the Convention?

The Intervention Convention obligates States to engage in consultations with other States affected by the maritime casualty, particularly with the flag State or States.[320] The Act omits this requirement. One writer has observed that this represents "a substantial deviation from the Convention" as well as being "contrary to the normal tendencies of a property-based system of law."[321] The

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any vessel in the haven or in or near the approaches thereto and inspect the vessel or any part thereof or its cargo or any of the machinery, boats, equipment, or articles on board the vessel for the purposes of carrying out the duties of the Board under any enactment, or for enforcing any enactment or byelaw which the board may lawfully enforce .... ."

320. Intervention Convention, Article III(a).

321. Forster, M. *op. cit.* in footnote 310, at p. 773. The omission

significance of deviation from the Convention should not be over-emphasised. Although U.K. enabling legislation must permit the terms of the international instrument to be enforced domestically in order to permit ratification of a convention without reservation there is no requirement that all the terms of a treaty be repeated in the U.K. law, if it is not necessary to do so in order to apply the convention. In the case of the obligation to consult with other States likely to be affected, H.M.G. explained that

> "We did not think that [inclusion of a statutory obligation to consult] would be appropriate to the Bill especially as the Convention itself provides for action without prior consultation or notification in cases of extreme urgency."[322]

As the powers conferred upon the Secretary of State under the Shipping Casualties Section must be "urgently needed" before they could be exercised in any event, it was not necessary to include a provision for consultation.[323]

Whether the Act may be legally applied to vessels flying the flags of States not Parties to the Intervention Convention depends upon whether or not such action can be justified under international customary law. As was pointed out in the discussion of the Intervention

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in the Act of the obligation to consult contained in the Convention is also criticised by Churchill, R. in his paper, "U.K.," in Churchill, R. (*et al.*) (eds.), *New Directions in the Law of the Sea*, Vol. III, The British Institute of International and Comparative Law, London (1973), pp. 281-301, at pp. 294-95.

322. *Hansard*, H.L. Vol. 316, col. 188, 11 March 1971; H.C. Vol. 815, col. 621, 7 April 1971.

323. H.M.G. did, however, assure M.P.'s that even though there was no statutory duty to consult with interested parties, consultations in respect of accidents both within and beyond the territorial sea would occur. *Hansard*, H.L. Vol. 315, col. 54, 9 February 1971; H.L. Vol. 316, col. 188, 11 March 1971. As H.M.G. has not yet exercised her powers to intervene with foreign vessels under the Shipping Casualties Section of the Act, there has been no opportunity to consult to date.

Convention above,[324] that instrument is not limited to the vessels flying the flags of States Parties. The question of intervention with foreign vessels on the high seas without their consent is therefore relevant to both the Act and the Convention. It has been observed several times that although freedom of navigation on the high seas is a rule of customary law, that freedom may be infringed in certain circumstances, such as the provision of safety zones around installations on the continental shelf. Each case requires that competing interests be weighed, yet this is difficult not only because measurement is necessarily subjective, but also because the relative weight of protectable interests changes. It appears unlikely that before the *Torrey Canyon* accident interference with the freedom of navigation on the high seas would have been widely supported by coastal States. The Intervention Convention resulting from the *Torrey Canyon* is evidence of a change in the relative values which some States now place on freedom of navigation and prevention of oil pollution. Freedom of the seas is giving way to order of the seas in respect of these competing interests as well as many others.[325]

It is submitted that emerging norms of customary law now permit limited proportional interference by the coastal State for the purpose of self-protection. Freedom of navigation must still be balanced against the need to provide for coastal State self protection both in the interests of justice and as a matter of practical politics.

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324. See above, at p. 188.

325. See the discussion of emerging norms of international customary law, particularly the Principles and Recommendations resulting from the Stockholm Conference of 1972 and the UNCLOS III proceedings, above at p. 96.

However, the technology which has produced supertankers has also increased the protection which society must provide its members. The doctrine of necessity is in effect a safety valve which permits *ad hoc* solutions to unusual problems within a generally accepted international framework.[326] When, however, technological evolution results in a permanent alteration in the need to legally protect an interest, a more permanent solution is desirable. It is submitted that international customary law provides a ready solution. As a reflection of the *opinio juris generalis*, it is but the doctrine of necessity writ large and made permanent by State practice. Yet, this "permanence" is only relative, for international customary law is as flexible as the *opinio juris* which is its *sine qua non*. It is suggested that the new and proposed national and international laws discussed in this thesis have evolved in response to a need and are strong evidence for the proposition that "reasonable" intervention with foreign flag vessels on the high seas has likewise now become permissible under international customary law.

Control of vessels involved in the development of petroleum from the U.K. and Norwegian North Sea continental shelves may also be effected indirectly through the jurisdiction exercised by those States over such development. Thus, although the licensee may determine which tankers to employ in the transportation of North Sea oil,[327] H.M.G. is in a position to influence the licensee's choice.

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326. See Brown, E.D., *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971), at p. 143.

327. Letter from Mr. J. Clayton, Department of Trade, 9 July 1976. In fact, the first tankers employed to bring oil ashore in the U.K. sector were Liberian. *Ibid.*

2. Merchant Shipping Act 1974[328]

Part II of this Act is enabling legislation which allowed U.K. ratification of the 1971 "Tanks" Amendment to the 1954 IMCO Convention.[329] The essence of that Amendment was to regulate the size and internal arrangement of cargo tanks in certain new and existing[330] oil tankers to limit the possibility, in the event of an accident, of serious environmental pollution.[331] When all sections in Part II of the Act have come into force,[332] the "Tanks" Amendment will apply to U.K. oil tankers and the Secretary of State will be authorised to take certain action with respect to foreign-registered

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328. 1974 Chapter 43.

329. Resolution to amend the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, concerning Tank Arrangements and Limitation of Tank Size, Cmnd. 5071, (1972). This Amendment is discussed above at p. 159. See also *Hansard*, H.C. Vol. 865, cols. 612-14, 29 November 1973. The Act also contains a number of other provisions concerning merchant shipping, including those collected in Part I which enable U.K. ratification of the International Oil Pollution Compensation Fund, 1971. The Fund is discussed above at p. 246; Part I of the Act is treated below, starting at p. 409.

330. Oil tanker construction rules may be made retroactive under S. 11(5). The Department of Trade had made it clear to the U.K. shipping industry immediately after the 1971 Tanks Amendment that legislation reflecting the provisions therein would be forthcoming. Thus, although the Department concede that retroactive regulations are unusual, they think that few problems will arise because U.K. shipyards have been applying the Amendments to vessels started for several years now. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976.

331. Amendment, Preamble.

332. Sections 10 (Interpretation of Part II) and 11 (Design and construction of oil tankers) of Part II and Paragraphs 1 (Surveys, inspections and certificates), 2 (Duty to notify alterations), 5 (Offences), and 6 (Fees) of Schedule 2 appended thereto came into force 1 November 1974. The Merchant Shipping Act 1974 (Commencement No. 1) Order (1974 No. 1792).

tankers as well.[333]

The scheme of regulation is based on a power to require that U.K. oil tankers qualify for a "tanker construction certificate" or a "tanker exemption certificate" before such vessels may engage in trade.[334] Such certificates will be issued to vessels which have satisfied the criteria to be specified in "oil tanker construction rules" on the basis of reports by surveyors.[335]

When S. 12 comes into force, it will be an offence for any oil tanker to sail from a United Kingdom port[336] unless:

"(a) it is a certificated oil tanker (within

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333. The Amendment has not yet received sufficient ratifications to become effective. Thus, even those States which have ratified the Amendment as yet receive no rights and are under no obligations flowing from it. It is necessary to examine the amended 1954 Convention in force as well as international customary law to determine the legality *vel non* of Part II under international law.

334. S. 11. The Secretary of State has not yet promulgated rules requiring U.K. oil tankers to carry such certificates. The Act is in this respect consistent with the Amendment which, in Article VI bis (2), requires that "(a) Contracting Government shall not permit such tanker under its flag to trade unless the appropriate certificate has been issued." The definitions of "oil tanker" and "oil" likewise follow the 1954 IMCO Convention, meaning respectively "a ship which is constructed or adapted primarily to carry oil in bulk in its cargo spaces (whether or not it is also so constructed or adapted as to be capable of carrying other cargoes in those spaces)," and "crude oil, fuel oil (including diesel oil) and lubricating oil." S. 10(4).

335. S. 11(1) empowers the Secretary of State to make "oil tanker construction rules;" this power has not yet been exercised. The provisions of S. 11 and Schedule 2, paragraph 1 authorising the Secretary of State to delegate authority to conduct surveys to organisations outside Government partially implements a recommendation of the Rochdale Report. *Hansard*, H.C. Vol. 865, cols. 616 *et seq*. See also Committee of Inquiry (Viscount Rochdale, Chairman), *Report*, Cmnd. 4337, (1970).

336. "Port" includes an offshore terminal. S. 10(4).

the meaning of Schedule 3 to this Act),[337] or

(b) it is not registered in the United Kingdom, and
  (i) if it were a United Kingdom oil tanker, it would qualify for the issue of a tanker exemption certificate, or
  (ii) its gross tonnage is less than 150 tons,[338] or

(c) the Secretary of State has issued it with leave to sail."[339]

The restriction on sailing applied to U.K. tankers is a legitimate exercise of State sovereignty and fulfills an obligation imposed by the Amendment.[340] Application of S. 12 to foreign-flag vessels, however, raises a question of legality under international law. The Amendment provides only that one Contracting Government may deny substandard tankers of another Contracting Government access to its ports or offshore terminals.[341] This is distinguishable from authorising

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337. Schedule 3, which is not yet in force, details the scheme for oil tanker certification. A certificated oil tanker may be registered in the U.K., another Convention Country, or in a non-Convention Country if the certificate meets criteria set out by the Secretary of State in a statutory instrument.

338. The 150 tons exemption implements Article II(1)(a) of the 1954 IMCO Convention which declares such vessels outside the Convention.

339. S. 12(1). "Leave to sail" is a procedure which will be applicable only to ships which do not produce certificates recognised by the 1974 Act. Letter from Mr. J. Clayton, Department of Trade, 9 July 1976. The Secretary of State may issue leave to sail to a foreign tanker if he is satisfied that it would qualify for a tanker construction certificate if it were a U.K. tanker. The very wide scope of his discretion is emphasised by the additional provision that he may issue leave to sail to either a U.K. or foreign-registered tanker "where he considers it appropriate to do so." S. 12(2).

340. 1971 Amendment, Article VI bis, paragraph 2. This Article provides in part that "(a) Contracting Government shall not permit such tankers under its flag to trade unless the appropriate certificate has been issued."

341. *Ibid.*, paragraph 4.

Contracting Governments to in effect hold substandard tankers captive. It would require an unrealistic stretching of the Amendment to justify the U.K. assertion of the power to prevent substandard foreign-flag tankers (or those of non-Parties) from sailing; legal justification, if any, must therefore be sought in international customary law.

It was concluded above that powers claimed by the U.K. in respect of oil discharge prevention in its territorial waters and ships' equipment regulations, both made applicable to foreign-flag vessels, were not inconsistent with emerging international customary law.[342] Three criteria upon which that conclusion was based were comparative State legislation, the absence of protest by other States, and the "reasonability test."

The assertion of a power to detain substandard vessels or those which do not comply with procedures required by national legislation is not unknown. Recent French legislation provides that ships which do not discharge wastes into oil reception facilities may be prevented from sailing.[343] However, neither the Canadian Arctic Waters Pollution Prevention Act nor the U.S. Ports and Waterways Safety Act expressly includes this provision. On the other hand, both instruments do authorise the prohibition of substandard vessels of any nationality from the 100 mile zone and territorial sea, respectively.[344] It may

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342. See the discussion of the Prevention of Oil Pollution Act 1971, above at p. 342.

343. See, Advisory Committee on Oil Pollution of the Sea, *Annual Report* (1975), at p. 7.

344. The U.S. Ports and Waterways Safety Act authorises the Secretary of Transportation to promulgate regulations which will

be seen therefore, that although the power to detain non-conforming foreign vessels is not unique, it was not claimed by two proponents of coastal State regulation of navigation.[345] Although absence of protest by States interested can afford some evidence of acceptance as law, S. 12 has not yet come into force, thus rendering this criterion of little evidential value.

Whether S. 12 as applied to foreign ships is reasonable depends both on the power it confers and how it is applied. The Secretary of State has discretion to issue a substandard ship leave to sail and is expressly authorised to impose conditions concerning tanker cargo and the port of destination.[346] These provisions clearly contemplate a situation in which oil must be transferred from the vessel to prevent potential marine pollution and/or the services of a repair yard are needed for the same objective. The general purpose of restrictions

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require all tankers in U.S. waters which are carrying oil or certain other cargoes to meet U.S. construction and operational standards. The owner or master of a vessel who negligently violates the American Act may be fined up to $10,000; a wilful violation may cause the offender to be imprisoned for up to 5 years. Pub. L. No. 92-340, 33 U.S.C. §§ 1221-1227 (1974 Supp.).

345. Note that the power to detain vessels is not provided for in the Prevention of Oil Pollution Act 1971 either. Among possible explanations for the omission of this power from other instruments is a purely practical one: port authorities are not gaolers and are simply not prepared to act as such on short notice from the Secretary of State. See, Sulivan, J.A., *op. cit.* in footnote 2, at p. 142.

346. The Secretary of State's discretion is limited only by the requirement that conditions be imposed "with a view to preventing or limiting the danger of oil pollution." S. 12(3). It has been pointed out that harbour authorities are unlikely to want a substandard ship tied up at a valuable berth. This factor, as well as remedy of the defect in the substandard vessel, will be a consideration in granting leave to sail to a specified destination. It is recognised that once the vessel has left

on the departure of foreign-registered tankers is therefore unobjectionable. However, the absence of any check on possible abuse or misjudgment by the Secretary of State is somewhat worrying. Suppose, for example, that a substandard tanker were sent to a U.K. repair yard even though the owner insisted that the work could as well be accomplished by a similar facility in his own State. Justifiably or otherwise, he might allege that the choice of a U.K. repair yard resulted from political (for example, high unemployment) rather than maritime considerations. There is no procedure in the Act for appeals from the Secretary of State's decision.[347] As in much U.K. legislation, it is left to the administrator to decide whether the Act has been applied fairly in a given case. S. 12 as drafted is of questionable legality although it is likely that the Act will be applied fairly, and cautiously in view of the potential injury to British shipping interests from retaliation by other States. It is also probable that S. 12 will gradually be accepted by interested States and so pass into international customary law.

Uncertificated tankers may also be restricted from entering any or all U.K. ports when S. 13 comes into force.[348] This power is based on the right of a sovereign State to control entry to its territory. So long as S. 13 is not applied in a manner which conflicts with a

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the jurisdiction there is little enforcement action which can be taken, although under S. 13, the Secretary of State may prohibit such a vessel from re-entering a U.K. port. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976.

347. However, statutory defences are provided.

348. S. 13(1). Alternatively, entry may be permitted subject to conditions. S. 13(2).

duty to which H.M.G. has consented,[349] the question of legality under international law is not raised.

Violation of the provisions of Part II subjects *both* the owner and the master of a tanker to a fine.[350] In the case of non-compliance with the requirement of certification or with a condition in a leave to sail, the fine on summary conviction may reach £10,000 and is unlimited on conviction on indictment.[351] It is a defence to prove that the tanker put to sea to ensure its safety or to reduce the risk of damage to any other vessel or property.[352] This defence expressly excludes sailing for the purpose of avoiding damage "caused by contamination resulting from the escape or discharge of oil from a tanker."[353] Thus, the master of a substandard tanker cannot use the result of his vessel's deficiency to avoid this provision of the Act and remove himself from U.K. territorial jurisdiction in the process.

Both the owner and the master of an oil tanker which enters a U.K. port in violation of the Secretary of State's direction or in violation of a condition imposed by him are liable on summary conviction to a fine not to exceed £15,000 or to an unlimited fine on con-

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349. Such as the Geneva Convention of 1923 which requires equality of treatment in ports.

350. *Cf.* the Prevention of Oil Pollution Act 1971 as interpreted by the *Federal Steam Navigation Co.* case which, though using the language "owner or master" was held to mean that both could be prosecuted. See above, p. 346.

351. S. 12(4).

352. S. 12(5). This defence is similar to that provided by Article IV(a) of the 1954 IMCO Convention, as amended, and S. 5 of the Prevention of Oil Pollution Act. See p. 346.

353. S. 12(5).

viction on indictment.[354] The larger maximum fine permissible on summary conviction reflects the greater damage which might be done to U.K. coastal waters by a tanker arriving laden with cargo as compared to a vessel in ballast sailing from a U.K. port to the high seas.[355] It is a defence in such proceedings to prove that the tanker entered the port out of necessity, either because of an emergency involving a threat to life or the safety of the tanker, or to circumstances beyond the control of the master.[356]

D. Pollution from Dumping at Sea: The Dumping at Sea Act 1974[357]

The Dumping at Sea Act implements the Royal Commission's urgent recommendation that "(l)egislation to implement the Oslo Convention on the Control of Marine Pollution by Dumping from Ships and Aircraft in the Northeast Atlantic should be introduced as a matter of priority."[358] The Act was intended to strengthen environmental protection by replacing a voluntary arrangement which had controlled dumping

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354. S. 13(4).

355. Letter to the writer from Mr. J. Clayton, Department of Trade, 9 July 1976. This may need amendment when Britain becomes a net oil exporter.

356. S. 12(5). This is also a rule of international customary law. *Cf. The Rebecca*, 23 *American Journal of International Law* 860-865 (1929).

357. 1974 Chapter 20, extended by the Dumping at Sea Act 1974 (Isle of Man) Order (1975 No. 810), and the Dumping at Sea Act 1974 (Guernsey) Order (1975 No. 811) to the Channel Islands.

358. Royal Commission on Environmental Pollution, *Third Report*, Cmnd. 5054 (1972), paras. 27 and 219, pp. 11 and 70. This Act also enabled U.K. ratification of the London and Oslo Dumping Conventions, and may have fulfilled an obligation to protect the environment which has emerged as international customary law.

beyond the U.K. territorial sea with a statutory framework.[359]

Although both the Act and the Conventions which it implements are primarily directed at the control of hazardous materials, they also apply to less dangerous items. The scope of the Act is limited, however, and it is questionable whether the protection afforded to the marine environment and to other users of the sea from dumping by support vessels and installations is adequate.

The Act provides that it is an offence for any person to engage in, or to cause or permit any of the following acts without a licence:[360]

1. Dumping in U.K. waters.

2. Dumping in the sea outside U.K. waters from a British ship, aircraft, hovercraft, or marine structure.

3. Loading any ship, aircraft, hovercraft or marine structure in the U.K. or its waters for dumping anywhere in the sea.

The Act does not apply to discharges "incidental to or derived from the normal operation of a ship, aircraft, vehicle, hovercraft or marine structure" unless it is "constructed or adapted wholly or mainly for the purpose of the disposal of waste or spoil and the discharge takes place as part of its operation for that purpose."[361]

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359. *Hansard*, H.L. Vol. 347, col. 1096, 11 December 1973. The Act is thought to be more effective than the voluntary scheme which it replaces because it is a formal system and because it covers a wider concept of dumping. Letter to the writer from Mr. M.J. Nelson, Ministry of Agriculture, Fisheries and Food (MAFF), 2 August 1976.

360. S. 1(1); London Dumping Convention, Article VI(2); Oslo Dumping Convention, Article 15(1). The Act is intended to apply to military vessels and aircraft "through administrative means as far as that is possible." *Hansard*, H.L. Vol. 346, col. 1264, 22 November 1973.

361. S. 1(3).

This provision was included in the Act to limit its application to the instruments of professional dumping, namely,

> "the operation of vessels which are specifically designed to dispose of waste at sea as part of their normal operations; for example dredgers and incinerator vessels."[362]

The exemption of incidental discharges from the Dumping at Sea Act severely limits its application to both vessels and offshore installations. Although the Conventions were intentionally limited in this manner in order to prevent conflict with the 1973 IMCO Convention for the Prevention of Pollution from Ships which will control incidental discharges, that instrument is not yet in force.[363] Furthermore, this limitation of national legislation designed to implement the Oslo Convention is at odds with the recent Draft Resolution by the Oslo Commission which would apply the Convention to discharges of debris resulting from petroleum development.[364] It is regrettable that at least a *de minimis* provision requiring offshore operators to use "all practicable means" to control the dumping of oil-related debris was not included in the Dumping at Sea Act.[365]

The Act employs a definition of "dumping" similar to that in the Conventions--but one which is open to criticism on at least a

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362. *Hansard*, H.L. Vol. 346, cols. 1263-1264, 22 November 1973.

363. *Hansard*, H.L. Vol. 351, col. 1289, 20 May 1974.

364. See above, p. 128. The MAFF maintain a list of operational discharges which they consider "incidental," but consider that only a court can give an authoritative interpretation of "incidental discharge." Letter to the writer from Mr. M.J. Nelson, MAFF, 2 August 1976.

365. Offshore operators have been advised on the Department of Energy policy concerning the control of debris dumping, pursuant to Continental Shelf Operations Notice No. 8, June 1972.

charge of substandard draftsmanship. The Act equates "dumping" with a "permanent deposit:"

> "(S)ubstances and articles are dumped in the sea for the purposes of this Act if they are permanently deposited in the sea from a vehicle, ship, aircraft, hovercraft or marine structure, or from a structure on land constructed or adapted wholly or mainly for the purpose of depositing solids in the sea."[366]

It is difficult to see in what way changing the definition employed by both Conventions, "any deliberate disposal,"[367] to "permanence" has effected an improvement in the control of dumping at sea. Parliamentary debates indicate that the U.K. definition was intended to exclude from licensing requirements temporary deposits in the sea, such as fishing gear, and it was emphasised that the Act is concerned "with that which is intended to remain in the sea."[368] Thus, refuse such as plastic containers which might by impetus of wind or current come ashore would have been "dumped" within the meaning of the Act if permanent disposal was intended and the other requirements of the Act were satisfied.[369] In other words, the Act was intended to implement the Conventions.

The licensing authority is the Minister of Agriculture, Fisheries and Food for waste loaded in England and Wales or loaded outside the U.K. into British vessels, the Secretary of State for Scotland for waste loaded in Scotland, and the Department of the Environment

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366. S. 1(2).

367. London Dumping Convention, Article II(1)(a); Oslo Convention, Article 19(1).

368. *Hansard*, Standing Committee B, cols. 6 *et seq.*, 7 May 1974.

369. *Hansard*, H.L. Vol. 347, col. 1089, 11 December 1973. The MAFF reports that the term "permanent" has caused no difficulties. Letter to the writer from Mr. M.J. Nelson, MAFF, 2 August 1976.

for waste loaded in Northern Ireland.[370] The licensee is typically the vessel owner or the company producing the waste to be dumped.[371] Upon receiving an application for a licence, the licensing authority must consult the Annexes appended to the Oslo and London Conventions which classify substances by the hazard they present.[372] If the substance or material to be dumped is not on the black list, a licence may be issued which satisfies the Conventions' requirement that it specify each instance of dumping in some cases or constitute a general approval in others.[373] However, the licensing authority must always consider

> "the need to protect the marine environment and the living resources which it supports from any adverse consequences of dumping the substances or articles to which the licence, if granted, will relate,"

before permitting dumping to occur.[374] To that end, he must "include such conditions in a licence as appear to the authority to be

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370. S. 12.

371. *Hansard*, H.L. Vol. 346, col. 1264, 22 November 1973.

372. It was decided not to include Annexes to the Act because the differing provisions of the London Dumping Convention and Oslo Convention Annexes would have to be reconciled, and because each revision to a Convention Annex would necessitate a corresponding amendment to the Annexes appended to the Act. There is no express duty imposed upon the licensing authority by the Act to consult the Convention Annexes, but it was clearly intended that they do so to fulfill the U.K. treaty obligations. See, *Hansard*, H.L. Vol. 347, col. 1094, 11 December 1973; London Dumping Convention, Article IV; Oslo Convention, Articles 5, 6, 7.

373. "Blacklist" is the common term employed to describe the London Dumping Convention and Oslo Convention Annexes which contain substances and materials which, subject to narrow exceptions, may not be dumped at sea.

374. S. 2(1). This was intended to be an overriding consideration. *Hansard*, H.L. Vol. 347, col. 1096, 11 December 1973.

necessary or expedient for the protection of that environment and those resources from any such consequences."[375] Dumping sites are selected by the licensing authority on the advice of its own experts on fisheries and marine pollution who in turn consult the provisions of the Conventions.[376]

The licensing authority alone determines licence issuance, conditions, variance, revocation, and fees.[377] An aggrieved licence holder or applicant has a right of appeal to the licensing authority, who then must constitute a committee to hear the appeal.[378] Constitution of the appeals committee by the authority whose decision is disputed was sharply criticised in Parliamentary debate,[379] but was justified on the basis that as the licensing authority knows the conditions and people involved better than an external body, it was the "right body to set up the committee."[380] H.M.G.'s position in this matter is another example of the British philosophy that control

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375. S. 2(1).

376. Factors which would be considered include the extent to which the waste is toxic, persistent or bioaccumulative; the amount to be dumped; water characteristics at the dumping site; tidal flow; and effect on fish and other marine organisms. There is no list of dumping sites, but the co-ordinates as designated in the licence are one of the "notifiable particulars" in the public register required to be kept under S. 4. Letter from Mr. M.J. Nelson, MAFF, 2 August 1976.

377. S. 2(2), (3). The licensing authority can impose fees to cover the cost of sampling and monitoring the substances to be dumped. S. 1(5), (6).

378. S. 3(1).

379. *Hansard*, H.L. Vol. 352, cols. 308 *et seq.* 10 June 1974; H.C. Vol. 871, cols. 1497-1498, 22 March 1974.

380. *Hansard*, H.C. Vol. 871, cols. 1497-1498, 22 March 1974.

of pollution is best achieved by negotiation and compromise within a legal framework rather than by purely legal means.[381] The appeals procedure is more remarkable for its inclusion in any form than for its actual provisions which could lead to a possible conflict of interest between the authority's administrative and judicial roles.

Other aspects of licence issuance have been criticised. There is a potential conflict between the licensing authority who may authorise dumping in coastal waters below high tide, and local authorities who may have an interest in the water quality where the dumping is to occur.[382] The Act imposes no duty on the licensing authority to consult with such local authorities or environmental bodies prior to issuing a licence to dump. Although in Parliamentary debate anxious M.P.s were assured that consultation would occur before licence issuance, in one case this has not happened: the Secretary of State for Scotland is preparing to issue a licence to the City of Edinburgh to dump sewage sludge and at the date of writing

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381. It is MAFF policy to encourage informal discussion. As of mid 1976, no formal appeals had been received. Letter from Mr. M. J. Nelson, MAFF, 2 August 1976.

382. Under the Control of Pollution Act 1974, the Water Authority or the Secretary of State may grant licences or give consent to dispose of polluting substances in controlled waters. S. 31(2)(a). The River Purification Authority exercises similar control in Scotland. S. 106(2). Local authority control is subject to the Dumping at Sea Act, however, pursuant to express provisions in the Control of Pollution Act which exempts dumping authorised pursuant to the former Act from the offence of polluting coastal waters under the latter Act. S. 31(2)(b)(iii), 32(4)(b). "Controlled waters" are defined by S. 56 of the Control of Pollution Act as waters within three miles of the low water mark. This definition may have to be changed if the

has not consulted with the River Boards which share responsibility for water quality in the dumping areas.[383]

A second criticism of the licence issuance procedure is that third parties have no right to make representations to either the authority when he is considering the merits of an application or before the committee should the applicant appeal, though their rights may be very much in issue.[384]

Enforcement of the Dumping at Sea Act depends to a great extent on voluntary cooperation. The Act contains provisions for reciprocal enforcement, but as a practical matter the extensive geographic area which would have to be policed, as well as problems of proof, preclude a purely legalistic approach.[385]

Any person who dumps without a licence or in violation of its terms is guilty of an offence[386] and is liable to a fine and/or imprisonment.[387] As in other U.K. legislation discussed in this thesis,

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U.K. declares a 12 mile territorial limit should that breadth become accepted at UNCLOS III.

383. Conversation with Dr. J.M. Heap, Depute Chief Technical Officer--River Inspector, 6 January 1975. This was still the case at the end of March, 1977.

384. However, there is nothing in the Act to preclude a civil action for an injunction or damages.

385. Conversations with Mr. D. Stott, Principal, and Mr. A. Templeman, Senior Executive Officer, Department of Agriculture and Fisheries for Scotland, 25 April 1975. Although S. 6 provides that an Order may provide for reciprocal enforcement of the London and Oslo Conventions, neither Convention has yet established such machinery and no Order has been made under the Act. Letter from Mr. M.J. Nelson, MAFF, 2 August 1976.

386. S. 1(6).

387. The maximum penalty on summary conviction is a fine of £400 and/or imprisonment of six months; following conviction on indict-

a standard of liability consistent with the Convention which the Act implements is employed. Four statutory defences to an offence are available:

1. Proof that the dumping was done for safety reasons and that steps were taken to notify the Minister within a reasonable time.[388]

2. Proof by an employee that he was acting under instructions given to him by his employer and that he took reasonable steps to ensure that no offence would be committed.[389]

3. Proof that the actor reasonably relied on false or misleading information and that he took reasonable steps to ensure that no offence would be committed.[390]

4. Proof that dumping outside U.K. waters from a British ship, aircraft or hovercraft was of waste loaded in and authorised for disposal by another Convention State.[391]

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ment an offender may be sentenced to imprisonment of not more than five years, to an unlimited fine, or to both. S. 1(6)(a), (b). As in the Prevention of Oil Pollution Act 1971, a possible prison sentence may well deter dumping by a person who might otherwise confidently expect his employer to pay any fine imposed.

388. S. 7. Both the London Dumping Convention, in Article V(1), and the Oslo Convention, in Article 8, provide exceptions for dumping undertaken for safety reasons.

389. S. 8(a).

390. S. 8(b).

391. S. 9. "'Convention State,' in relation to the London Convention, the Oslo Convention or a designated Convention, means a State declared to be a party to that Convention by an order." S. 12. No Order specifying Convention States has yet been issued under S. 12(3) of the Act. This provision avoids the conflict possible under the Act and both Conventions which would require, for example, the owner of a British vessel loading material in Oslo for dumping on the high seas to obtain a permit to dump from both British and Norwegian authorities.

Each licensing authority appoints its own enforcement officers.[392] Inspectors may be either officers of the Ministry's Fisheries Inspectorate or scientists from the Marine Environment Protection Division of its Fisheries Laboratories. Inspection is made of premises where wastes intended for dumping are produced or where they are stored, as well as of the vessel involved. Enforcement depends upon checking documentation, sample analysis, and actual presence on board the dumping vessel at the site.[393]

In conclusion, it is the writer's view that the Dumping at Sea Act is a reasonable approach to a problem which, like many of those raised in this thesis, reflects the limitations imposed by other disciplines upon law. The logistics of enforcement are such that unless technology provides some assistance, law must depend to a dangerous extent upon the *bona fides* of those whose actions it seeks to regulate. This is not to gainsay that cooperation between the regulated and regulators is not a *sine qua non* for any democratic legal regime. The point is that as the freedom to dispose of wastes diminishes, the cost of so doing rises inversely, and enforcement becomes more of a problem. Finally, it is important to reiterate that

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392. S. 5(1).

393. Letter from Mr. M.J. Nelson, MAFF, 2 August 1976. The Act provides that an enforcement officer may inspect in U.K. land territory, all ships in U.K. ports, and "British ships, aircraft, hovercraft and marine structures wherever they may be," provided that he reasonably believes "that any substances or articles intended to be dumped in the sea are or have been present." S. 5. The enforcement officer is authorised to require anything which will facilitate boarding a vessel suspected of actual or intended dumping, including stopping such vessel. S. 5. An unjustifiable request, such as a needless demand that the master return to port, would subject the inspector to criminal or civil liability. *Hansard*, H.L. Vol. 347, cols. 1111 *et seq.*, 11 December 1973.

our knowledge of the effects wrought on the marine environment is imperfect indeed.

E. Conclusion

U.K. legal control of pollution from seabed operations is largely based on national, rather than international, law. As there are as yet no conventions regulating such activities, the British approach has been to construct a national framework which is consistent with their policy of rapid resource development, yet provides reasonable protection against injury and is consistent with international customary law.

The control of pollution from vessels and dumping is effected through the framework of international conventions. If U.K. law may occasionally be challenged as exceeding treaties which it is meant to implement, in practice there has been no violation of international law.

CHAPTER SEVEN

THE U.K. LAW OF LIABILITY FOR MARINE POLLUTION

A. Introduction

This chapter is concerned with U.K. law dealing specifically with compensation for damage caused by marine pollution. Thus, although reference may be made to the common law theories of recovery, they will not be discussed separately.[1] The discussion of statutory schemes of recovery immediately below is intended not only to explain their operation, but also to suggest questions concerning compensation for marine pollution damage. These larger questions will be considered in the final Chapter of this thesis, "A Model Legal Regime for the North Sea."[2] As in the case of marine pollution control, the U.K. law of civil liability for marine pollution damage has been shaped to a large extent by international conventions. See Table VII-1 on the following page.

B. Merchant Shipping (Oil Pollution) Act 1971[3]

Like the majority of the U.K. legislation discussed above, this Act implements the terms of an international Convention. This Act is

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1. See, Keeton, G., "The Lessons of the *Torrey Canyon:* English Law Aspects," 21 *Current Legal Problems* 94-112 (1968).

2. See below, p. 515.

3. 1971 Chapter 59. S. 21(3) of the Act provides that different days may be designated for the coming into force of different parts of the Act. Some parts of the Act were delayed until the Convention came into force. Thus, the Merchant Shipping (Oil Pollution) Act 1971 (Commencement) Order (1971 No. 1423) brought into force certain provisions of the Act. The Merchant Shipping (Oil Pollution) Act 1971 (Commencement No. 2) Order (1975 No. 867) implemented the remaining provisions, coincident with the coming into force of the Convention.

TABLE VII-1

U.K. ACCEPTANCE OF CIVIL LIABILITY CONVENTIONS

Convention	Signed	Ratified/ Acceded	Relevant U.K. Law
Civil 1969	29-11-69	17-3-75	Merchant Shipping (Oil Pollution) Act 1971
Fund 1971	18-12-71	2-4-76	Merchant Shipping Act 1974
Offshore 1976	17-12-76		In preparation

the child of the Civil Liability Convention (hereafter, the Convention), just as the Convention issued from the *Torrey Canyon*.[4] The *Torrey Canyon* had raised three main problems related to liability for such accidents:

1. What type of liability should be imposed? Liability based on negligence raised doubts whether some costs, such as those incurred in cleaning the affected area, would be recoverable.

2. What limits--if any--should be set on liability? The existing level of shipowner's liability was thought by many to be far too low.

3. Should there be a specified forum? If so, should it be the State damaged, the State of vessel registration, or some other interested State?[5]

The Act, in implementing the Convention, attempts to resolve these questions in the following manner:

1. The shipowner is made strictly liable.

2. Liability limits are retained, but increased.

3. U.K. courts have jurisdiction only over claims for damage done in the U.K. or its territorial waters.

It is intended that these points provide a framework for discussion of the Act which follows.[6]

1. Strict liability

S. 1(1) of the Act is of such importance that it is reproduced here to facilitate understanding of the discussion:

> "Where, as a result of any occurrence taking place while a ship is carrying a cargo of persistent oil

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4. The Convention is discussed above at p. 240.

5. *Hansard*, H.L. Vol. 314, col. 1080, 28 January 1971.

6. One claim has been made under the Act as of mid-1976. Letter to the writer from Mr. E.H. Whitaker, Department of Trade, 16 July 1976.

> in bulk, any persistent oil carried by the ship (whether as part of the cargo or otherwise) is discharged or escapes from the ship, the owner of the ship shall be liable, except as otherwise provided by this Act,--
>
> (a) for any damage caused in the area of the United Kingdom by contamination resulting from the discharge or escape; and
>
> (b) for the cost of any measures reasonably taken after the discharge or escape for the purpose of preventing or reducing any such damage in the area of the United Kingdom; and
>
> (c) for any damage caused in the area of the United Kingdom by any measures so taken."

S. 1(1) provides that liability follows "any occurrence" which causes oil pollution; however, a list of exceptions includes discharges or escapes resulting from war, certain natural phenomena,[7] acts or omissions of third parties done with intent to cause damage,[8] and acts or omissions of an authority charged with the maintenance of navigational aids.[9] Both the Act and the Convention also allow the

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7. The exception for "an exceptional inevitable and irresistible natural phenomenon" is that employed by the Convention. This definition may be distinguished from the common law concept of "act of God." Foster, M. "Civil Liability of Shipowners for Oil Pollution," *Journal of Business Law* (1973), pp. 23-31, at p. 25.

8. The exception in favour of an act by a third party is qualified in the Act by the phrase, "not being a servant or agent of the owner." In this respect the Act is more narrow than the Convention: should an employee of the owner (for example, the master) intend to do damage, it appears that the owner would be liable under the Convention but not under the Act.

9. As Professor Brown has observed, under the last exception the victim's only recourse would be against the erring authority. See Brown, E.D., *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971), at pp. 171-172. In the other instances the victim would be without a statutory remedy. The list of exceptions is contained in S. 2 of the Act and Article III(2) of the Convention.

owner wholly or partially to exonerate himself if he proves that the victim was contributorily negligent.[10]

In addition to statutory exceptions, liability is also qualified by the language of the Act which describes to what occurrences it shall apply. S. 1(1) is limited to occurrences coincident with the carrying by a ship of persistent oil in bulk. "Carrying" is not defined by either the Act or Convention, however, an omission which might well prove significant. Is a loaded tanker "carrying" oil if it is tied up at a dock in a harbour? In the opinion of an official at the Department of Trade, this question must be answered in the affirmative.[11] Other and more difficult questions can be imagined: would the owner of a tanker be liable for oil which merely passes through the vessel during loading if such discharge were found to be caused by negligence of the crew? As between the person in charge of the loading installation and the tanker owner it is clear that the latter is responsible for the damage. It is less clear that a claim for such damage may be brought under this Act.

Nor is the term "ship" defined by the Act, although the Convention definition is "any seagoing vessel and any seaborne craft, of any type whatsoever, actually carrying oil in bulk as cargo."[12] This omission is unfortunate, for the term as employed by the Convention could have been more sharply defined. This may be illustrated by another hypothetical instance of oil pollution: suppose that oil

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10. S. 1(5); Convention, Article III(3).

11. Letter to the writer from Mr. E.H. Whitaker, Department of Trade, 16 July 1976.

12. Convention, Article I(1).

was being loaded into a floating oil storage tank (perhaps a surplus tanker acquired at a bargain price). If this "storage tank" is not a "sea-going vessel" or a "seaborne craft" it is not covered by the Convention. This is not a major criticism, and it is conceded that the problem posed is not insoluble. (A simple and logical test to distinguish "tankers" from "storage tankers" might be the criterion of "major modification:" if a "storage tanker" could be used as a "sea-going vessel" without major modifications as set out in an Annex, the Act and the Convention should apply, but not otherwise.) However, such issues however hypothetical need never arise at all in instruments which carefully define their terms.

The limitation of S. 1(1) to persistent oil is consistent with the Convention and is some evidence that present systems of civil liability are primarily intended to compensate property owners. A spill of refined products could have devastating effects upon the ecology of a shallow bay, but is not a particularly serious "contamination" problem that need concern littoral property owners. Thus, not only does no one have standing to protect areas designated *res communis* or *res extra commercium*, but a source of considerable danger to the environment remains unregulated.

The Act is consistent with the Convention in holding only the owner--rather than the owner or master, as in the 1954 IMCO Convention and the Prevention of Oil Pollution Act 1971--liable for offences, although the 1971 Fund and the implementing Merchant Shipping Act 1974 do shift some of this burden to the cargo owner.[13] "Owner" means the

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13. The Fund Convention is discussed above at p. 246; the Merchant Shipping Act 1974 is analysed below at p. 409.

registered owner, except in the case of State ships when it refers to the person registered as the operator.[14] The Act, however, contains a specific exemption not only for warships, but for "any ship for the time being used by the government of any State for other than commercial purposes."[15] Thus, a privately-owned tanker chartered to the Royal Navy would not come within the Act because it was being used by the Government. The Convention also contains an exception for State ships, but it requires non-warships used in Government non-commercial service to be either owned or operated by the State.[16] This discrepancy could have practical results: A chartered tanker, operated by its private owners for the Royal Navy, would fall within the Convention but outside the Act.

S. 1(1)(a) limits damage geographically to "the area of the United Kingdom," which includes the territorial sea,[17] and provides that the Act applies to such damage as is caused by contamination. "Contamination" is not defined in the Act; the Convention refers to "pollution damage" which is defined as contamination but does not clarify the meaning of the latter term.[18] Does the term refer merely

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14. S. 20(1); Convention, Article I(3). "Owner" also refers to the owner at the time of the occurrence or first of the occurrences resulting in the discharge or escape. S. 20(2).

15. S. 14(1).

16. Convention, Article VI.

17. Neither the Act nor the Convention applies to damage on the high seas or to the continental shelf--even if property interests (such as interference with offshore petroleum development) are clearly damaged. S. 20(3); Convention, Article II.

18. Convention, Article I(6). It will be recalled that the Shipping Casualties section of the Prevention of Oil Pollution Act 1971

to an alteration of the pre-existing state of the water, beaches, fishing gear, etc.? Or must there also be some economic loss? The courts have not yet had occasion to consider this question.[19] Certainly the Act may be used by the owner of an oil-blackened beach. His property has been rendered less valuable as a result of contamination. He may also be successful in claiming compensation for loss of earnings which would have resulted from tourists who now avoid the area. It is unlikely, however, that a tourist whose holiday is ruined by oil on the beach would recover, despite the fact that holiday time is certainly reckoned in economic terms daily in labour negotiations and staff recruitment.

S. 1(1)(b) limits the owner's liability to pay for measures taken to prevent or reduce damage to those that were reasonably taken.[20] An owner liable for the cost of abatement measures taken by the plaintiff may also be liable for the damage done by those measures, if the victim acted reasonably.[21]

S. 15 provides liability for the cost of preventive measures where S. 1 does not apply. If, for example, fuel oil is discharged or escapes from the bunkers of a dry cargo ship, S. 1 is inapplicable

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is similarly abridged when compared to the Intervention Convention which, unlike the Act, enumerates "related interests" which may be protected.

19. No court proceedings had been taken concerning the Act as of mid 1976. Letter to the writer from Mr. E.H. Whitaker, Department of Trade, 16 July 1976.

20. Professor Brown has noted that one result of this provision is that "the user of detergents would have to satisfy himself in the light of their known harmful effects whether such measures would be considered 'reasonable.'" Brown, E.D., *op. cit.* in footnote 9, above, at p. 168.

21. S. 1(1)(c).

because the vessel was not carrying persistent oil in bulk.[22] S. 15 refers only to "ships;" unlike S. 1 and the Convention there is no requirement of "carrying a cargo of persistent oil in bulk." H.M.G. admitted that S. 15 thus went beyond the Convention, but apparently thought that provision in the Act for recovery in cases not covered by S. 1 more important than consistency with the treaty.[23]

Subsections (2), (3) and (4) of S. 1 further clarify the nature and scope of shipowner's liability. S. 1(2) provides that a person incurring liability under subsection (1) is also liable for similar damage caused to another Convention country.[24] Thus, the owner of a tanker such as the *Torrey Canyon* which has caused damage in the U.K. and in France is liable for damage to both Convention countries under the Act. It is important to note, however, that damage, to confer jurisdiction on British courts, must first occur in the U.K.[25]

S. 1(3) of the Act implements the Convention's provision of joint and several liability.[26] Where oil is discharged from two or more ships and each owner is liable under S. 1, then each owner is liable for the entire amount of the damage, unless each share can reasonably

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22. The Act would not apply to a combination oil/bulk ore carrier carrying ore. Brown, E.D., *op. cit.* in footnote 9, above, at p. 167, and sources cited therein regarding the Convention.

23. *Hansard*, H.L. Vol. 314, col. 1082, 38 January 1971.

24. S. 19(1). The Act distinguishes a Convention country (for example, any of the Channel Islands, any colony for whose external relations the U.K. is responsible) from a Convention State which is a State Party to the Convention. Ss. 18, 19. Convention, Article II.

25. S. 13(2); *Hansard*, H.L. Vol. 314, col. 1084, 28 January 1971.

26. Convention, Article IV.

be determined.

S. 1(4) is intended to deal with a situation in which multiple discharges result from the same incident.[27] In such a case the successive events are treated as one with the first, but any measures taken after the first of them is deemed to have been taken after the discharge. The last clause thus allows a victim to claim costs for measures reasonably taken *after* the discharge to prevent further damage, under S. 1(1)(b).

2. Increased liability

The Civil Liability Convention increased the liability limits previously set by the 1957 Brussels Convention, but still retained a liability ceiling. The Act follows this formula.

S. 3 restricts the ship owner's liability for oil pollution damage to actions taken pursuant to S. 1 of the Act, and exempts servants and agents of the owner as well as any person performing salvage operations from any liability at all.[28] The Act thus becomes the exclusive means of recovery in U.K. law. Limitation of damage actions to those taken pursuant to the Act is a typical feature of

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27. This implements Article III(1) of the Convention.

28. However, nothing in the Act prejudices the shipowner's right to recover from a third party. S. 16; Convention, Article III(5). In this way although the shipowner may not ultimately bear the full costs of an award of damages, liability is channeled through him. Restrictions on actions against the owner's servants or agents behind whom an owner would normally stand prevents an indirect means of commencing further proceedings against the owner. *Hansard*, H.C. Vol. 821, 12 July 1971. The subparagraph excluding liability for damage caused by salvage operations performed with the agreement of the owner was included to facilitate salvage of a damaged vessel. The analogous provision in the Convention is Article III(4).

schemata which balance strict liability with limited liability: unless the latter factor is assured, agreement to the former is unlikely by the State or person who will have to pay.[29]

The owner may limit his liability under the Act to 2,000 gold francs for each ton of the ship's tonnage not to exceed a maximum of 210 million gold francs.[30] However, this limitation does not apply if the incident occurred with the shipowner's actual fault or privity.[31] In a claim against a shipowner, a court must first determine whether the owner may limit his liability. If the court finds that the incident occurred without the shipowner's actual fault or privity, the owner must then pay into court the appropriate amount as determined by the francs/tonnage formula. The court then determines the distrib-

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29. See, for example, the Warsaw Convention which is based on negligence, but with the burden of proof shifted to the defendant air carrier to show that it was not below the standard of care. Limited liability was the *quid pro quo* for the shift in the burden of proof. Convention for the Unification of Certain Rules relating to International Carriage by Air (Warsaw, 1929). The English text of this Convention may be found in the Carriage by Air (Application of Provisions) Order (1967 No. 480/67).

30. S. 4(1)(b); Convention, Article VI. S. 4(2) contains detailed provisions concerning the determination of a ship's tonnage. The 210 million gold franc maximum liability limit (about U.S. $14 million) is the Convention top limit as well, and was determined to a great extent by the capacity of the insurance market to cover possible claims. It was recognised at Brussels that this limit "does not afford full protection for victims in all cases," and in consequence it was resolved to set up an International Fund. See the discussion of the Civil Liability Convention and the "Resolution on Establishment of an International Compensation Fund for Oil Pollution Damage," above at p. 240 and p. 246; the Compensation Fund Convention, above at p. 246; and the Merchant Shipping Act 1974, Part I, which implements the Fund in U.K. law, below, at p. 409.

31. S. 4(1); Convention, Article V(2). "Privity" connotes "an element of personal fault as opposed to responsibility for the acts of others." *Hansard*, H.C. Vol. 816, col. 1577, 5 May 1971.

ution of that amount.[32]

A person liable under the Act is entitled to offset the cost of any reasonable measures to prevent pollution, and this cost will be considered by the court in distributing the amount paid in.[33] Once a fund at least equal to the amount of damage has been paid into court, the court must order the release of any ship or other property arrested in connection with the claim, and no judgment shall be enforced in respect of the claim except insofar as it is for court costs.[34] Likewise, no proceedings may be taken against a non-owner liable under the Act if he is entitled to limit his liability and the owner has paid into court an amount at least equal to his own liability.[35] The owner or another person in the U.K. may also limit liability in other Convention Countries, provided that the amount paid into court covers damage which was caused there.[36] As is provided in the Convention, no action may be brought later than three years after the claim arose nor later than six years after the occurrence resulting in the discharge.[37]

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32. S. 5(2); Convention, Article V(4). The court may set a time limit within which an application to limit liability must be made. S. 5(3).

33. S. 5(5); Convention, Article V(8). If the owner, insurer, or another person entitled under the Act to limit his liability has paid any compensation, he acquires by subrogation the rights of the person compensated to the extent of his payment. S. 5(4); Convention, Article V(5).

34. S. 6(1); Convention, Article VI.

35. S. 7.

36. S. 8; Convention, Article VI.

37. S. 9; Convention, Article VIII.

Certainty of compensation to the victims of oil pollution is sought to be achieved by a system of compulsory insurance. S. 10(2) provides that no ship[38] shall enter or leave a port in the U.K. or a terminal in her territorial sea unless there is in force a certificate of insurance satisfying the requirements of Article VII of the Convention. This regulation extends to U.K.-registered vessels entering the ports or offshore terminals of any other country. Certificates are issued by the Secretary of State[39] for U.K. ships and those of non-Convention countries, and by the Governments of Convention countries in respect of their vessels.[40] The Secretary of State may also by regulations provide that a certificate issued to a non-Convention country by a Convention country other than the U.K. will be recognised by H.M.G.[41] Regulations to this effect have been made.[42] It is an offence for a ship to enter or leave a port or offshore terminal, or to attempt to do so, in violation of the provisions of

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38. Ships required to carry insurance are those carrying in bulk a cargo of more than 2,000 tons of persistent oil. S. 10(1); Convention, Article VII. A ship carrying less than 2,000 tons of oil in bulk is still within that class of ships to which the liability sections of the Act apply, but is not required to carry insurance or other security. "Persistent oil" is described in S. 3 of the Oil Pollution (Compulsory Insurance) Regulations (1977 No. 85); the more general description of "oil" in the Convention is contained in Article I(5).

39. The Secretary of State for Trade.

40. Ss. 10(3), 11; Convention, Article VII(2). The Compulsory Insurance Regulations detail provisions regarding insurance certificate recognition, application fee, and certificate cancellation.

41. S. 10(4).

42. The Oil Pollution (Compulsory Insurance) Regulations 1977 replace earlier Regulations. North Sea States include Denmark, France, Germany, the Netherlands, and Norway.

the Act. The owner *or* the master may be fined up to £35,000 on summary conviction, and fined without limit following conviction on indictment.[43] Subjecting the master as well as the owner to a fine is a departure from the statutory provisions for civil liability in which only the owner is subject to suit to recover damages. Including the master as a defendant is possible because although the Convention requires States Party to prohibit their ships from trading without a certificate of insurance, it leaves the means of control open. The provision that either the owner or master may be fined is consistent with the Prevention of Oil Pollution Act 1971, and the comments made in regard to that Act are relevant here as well. The previous remarks indicated that under a recent case, "owner *or* master" has been interpreted as "owner *and* master;" should that interpretation apply to this Act, a total fine of £70,000 would be possible on summary conviction of the defendants. It was also noted that one authority has roundly criticised large fines imposed by criminal law against the master: Such sanctions are unfair, he asserts, because they are directed at the shipowner--not the master who could not possibly pay the maximum.[44]

Failure to carry or produce a certificate when required is a separate offence for which the master may be fined.[45]

S. 10(8) provides that if a ship attempts to leave a port in the U.K. without complying with the requirements for compulsory insurance, that ship may be detained. This provision is a faithful reflection

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43. S. 10(6).

44. See above, p. 346.

45. S. 10(7). The fine is limited to £400 on summary conviction.

of the Conventional requirement that each Contracting State ensure under national legislation that any ship, wherever registered, entering or leaving a port or offshore terminal have insurance or other security in force.[46] Although detention is limited to ships attempting to leave U.K. ports, the large fines possible should certainly satisfy the obligation imposed by the Convention in respect of arrivals at U.K. ports and arrivals and departures at offshore terminals.

The issue of detention of non-Parties' vessels is contentious. It was previously discussed in connection with vessel construction standards which the Merchant Shipping Act 1974 purports to apply to all vessels, and which also authorises the detention of vessels which are substandard.[47] It was concluded in connection with that Act that the claimed powers were probably consistent with international law because freedom of navigation, the right of innocent passage through the territorial sea, and immunity of foreign ships in port--none of which were ever absolute--are becoming increasingly subject to reasonable regulation fairly applied. That aspect of the Merchant Shipping Act 1974 was judged to be consistent with international law because it met the criteria of reasonability and fairness, both in relation to the legislation of other States which authorised more extensive powers to protect similar interests and non-discriminatory application. Those comments are applicable in regard to the provision of the instant Act as well.

S. 10(8) of this Act appears to have been applied cautiously and

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46. Convention, Article VII(11).

47. See above, p. 376.

and in a non-discriminatory manner. Professor Brown, discussing Article VII(11) of the Convention upon which S. 10(8) of the Act is based, has little problem in finding that there is no conflict with international law:

> " .... it seems unlikely that this provision would create any significant difficulties. So long as the application of the rules is non-discriminatory and their existence is published in advance, they would be quite compatible with most treaty obligations regarding freedom of access to ports. For example, the 'liberty of access to all ports,' etc., and the most-favoured-nation and national treatment granted in the Treaty of Commerce, Establishment and Navigation between the United Kingdom and Japan (1962) do not affect the right of the parties to make non-discriminatory port byelaws and regulations."[48]

A victim of oil pollution damage within this Act may proceed directly against the person who provided the insurance or other security for the vessel causing the injury.[49] This provision offers the immense advantage from the victim's point of view of speedy, uncomplicated recovery for his loss. On the other hand, Article VII(8) of the Convention upon which this provision is based was opposed by delegations to the Brussels Conference--including the U.K. delegation--on the grounds that it would encourage frivolous claims. As a result, insurers were allowed limited defences and a right to join the owner in the proceedings.[50] The insurer may also limit his

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48. Brown, E.D., *op. cit.* in footnote 9, at p. 177, and sources cited therein.

49. S. 12.

50. Brown, E.D., *op. cit.* in footnote 9, at p. 176. S. 12(2) provides that the insurer may avail himself of any defence which the owner could have used, as well as the defence that the discharge or escape was due to the wilful misconduct of the owner himself. This is the extent of insurer defences, however: the insurer

liability.[51]

3. Jurisdiction

Contamination damage in the area of the U.K. is a prerequisite to jurisdiction by U.K. courts.[52] This is true even if claims for damage to other Convention countries are lodged in U.K. courts. On the other hand, S. 13(3) of the Act implements the obligation imposed by the Convention to provide for reciprocal enforcement of judgments.[53] The effect of these provisions is to clarify and to limit the jurisdictions in which a claim under the Convention and the Act may be brought. Thus, the practice of "forum shopping" in which those who could afford to do so selected the court likely to maximise their recovery has yielded to the doctrine that there should be some connection between the forum and the act complained of.

C. Merchant Shipping Act 1974

Part I of this Act enabled U.K. ratification of the International Compensation Fund which was established to complement the Civil Liability Convention.[54] Part I is divided into subsections and that ordering has been adopted in this thesis to facilitate the discussion which follows. As most of the terms in this Act are defined as they are in the Merchant Shipping (Oil Pollution) Act 1971, just described,

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may not invoke defences normally open to him such as misrepresentation. *Hansard*, H.L. Vol. 314, col. 1083, 28 January 1971.

51. He may do so even if the owner cannot because of actual fault or privity. S. 12(3); Convention, Article VII(8).

52. S. 13(2); Convention, Article IX(1).

53. Convention, Article X.

54. The Fund Convention is discussed above, at p. 246.

only the significant differences will be noted.

1. Contributions to Fund

Contributions must be paid to the Fund in respect of any oil[55] carried by sea to ports or terminal installations[56] in the U.K.[57] Such contributions are due whether or not the oil is imported and even if contributions were payable for the same oil on a previous voyage.[58] This provision is therefore applicable to North Sea oil

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55. "Oil" has two definitions under the Act and the Fund Convention, depending upon whether it is used in reference to contributions to the Fund or otherwise. "Oil" used under the sub-heading "Contributions to Fund" in the Act (and termed "Contributing Oil" in the Fund Convention) is restricted to crude and fuel oil. S. 2(9); Fund Convention, Article 1(3). These terms are defined technically in the same sections of both instruments. Other "oil" means "persistent hydrocarbon mineral oil." S. 1(3); Fund Convention, Article 1(2). The Act does not further define this term, but the Fund Convention uses the Civil Liability Convention definition of "oil," which includes heavy diesel, lubricating, and whale oil. As the Act must follow the Convention in all important particulars to satisfy H.M.G.'s treaty obligations, it is assumed that the Act is similarly restricted. The effect of this restriction is that the Act (and the Fund) do not apply to the same range of cargo encompassed by the Merchant Shipping (Oil Pollution) Act 1971 (and the Civil Liability Convention).

56. A "terminal installation" is a bulk oil storage site which is capable of receiving oil from waterborne transportation, including offshore facilities linked to such site. S. 2(9); Fund Convention, Article 1(8).

57. S. 2(1); Fund Convention, Article 10(1).

58. S. 2(2). A "previous voyage" can be determined by reference to the bill of lading. The voyage of the cargo is the point of origin and the point of destination, regardless of intermediate stops. Conversation with Col. J.A. Sulivan, General Manager, Milford Haven Conservancy Board, 11 June 1976. Contributions are also payable even if the oil cargo came from a non-Fund Convention country. S. 2(3). As noted in connection with mandatory carriage of insurance for oil tankers, so long as rules imposing requirements upon foreign flag vessels in U.K. ports are applied in a non-discriminatory manner and are published in advance they raise no serious problems of international law.

which is transported to British shores by tanker: it is subject to assessment notwithstanding the fact that it is not "imported."

The person liable to pay contributions is the importer[59] or, if the oil is not imported, the one receiving the oil.[60] There is no liability to pay contributions if a person[61] has not received more than 150,000 tonnes of oil.[62] The contributions due from a person who is liable are determined according to the provisions of Articles 11 and 12 of the Convention.[63] The Secretary of State[64] may make regulations detailing the procedure to be followed by persons from whom contributions are due, and providing penalties for offences.[65] The Secretary of State may also by notice require any person engaged in producing, treating, distributing or transporting oil to furnish

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59. The importer is "the person by whom or on whose behalf the oil in question is entered for customs purposes on importation, and 'import' shall be construed accordingly." S. 2(9).

60. S. 2(4); Fund Convention, Article 10(1).

61. All members of a group of companies are treated as a single person, and any companies amalgamated into a single company are treated as the same person as the single company. S. 6. "Company" means a body incorporated under law; "Group" means a holding company and its subsidiaries as defined by specified U.K. law. S. 2(9). Lumping the constituent companies of a group or amalgamation together prevents multiple claims of the 150,000 tonne exemption to which the Act does not apply.

62. S. 2(5); Fund Convention, Article 10.

63. S. 2(7)(a). Contributions shall be payable in such installments as may be notified to a person liable to pay. S. 2(7)(b).

64. The Secretary of State for Trade.

65. S. 2(8). Regulations may contain such supplemental or incidental provisions as appear to the Secretary of State expedient, and may impose penalties punishable on summary conviction by a fine not to exceed £400. No regulations have yet been promulgated under S. 8.

specified information.[66] The purpose of this power is to provide the Fund with the names and addresses of persons liable to make contributions to it, and the quantity of oil for which they must contribute.[67] Penalties are provided not only for failure to comply with a notice, but for the disclosure of information provided pursuant to notice without the consent of the person from whom it was obtained.[68]

2. Compensation for persons suffering pollution damage

The Fund is liable for pollution damage[69] in the United Kingdom[70] if the person who suffered the damage was unable to obtain full compensation under S. 1 of the Merchant Shipping (Oil Pollution) Act 1971

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66. S. 3(1). Such information may include that necessary for a determination of whether the company shall be treated as a single person under S. 2(6). S. 3(2). A formal letter has been sent to persons subject to this provision notifying them of information required. Letter from Mr. E.H. Whitaker, Department of Trade, 16 July 1976.

67. S. 3(1); Fund Convention, Article 15(1).

68. S. 3(5). The fine on summary conviction may not exceed £400. A person who refuses or wilfully neglects to comply with a notice or in furnishing information makes any statement which he knows to be false or recklessly makes such a statement is subject to the same penalty on summary conviction; on conviction on indictment he may be fined an unlimited amount and/or imprisoned for a maximum of 12 months. S. 3(6). These provisions fulfill the Conventional obligation that duties imposed thereunder be carried out. Article 13(2) of the Fund Convention.

69. "Pollution damage" is defined by the Act as "damage caused outside the ship carrying oil by contamination resulting from the escape or discharge of oil from the ship, wherever the escape or discharge may occur, and includes the cost of preventive measures and further damage caused by preventive measures." S. 1(3).

70. "In the United Kingdom" is not defined in the Act. The Fund Convention, however, applies to "damage caused on the territory including the territorial sea" of a Contracting State. Convention, Article 3. As the Act (and the Convention) applies to offshore installations in the territorial sea, and the Merchant Shipping (Oil Pollution) Act 1971 (which implements the Civil

because:[71]

1. An exception under S. 2 of the 1971 Act barred recovery (for example, an act of God).

2. The person liable cannot meet his obligations.

3. The damage exceeds the liability limits of the 1971 Act.

The Fund is also liable for pollution damage under the 1971 and 1974 Acts when the Fund is headquartered in the U.K. and proceedings have been brought in a country which is not a Party to the Fund Convention, or when both the U.K. and another Fund Convention country have been injured and proceedings have been brought in the U.K. or in a non-Party country.[72] The definition of "pollution damage" is expressly stated to include costs reasonably incurred by the owner in attempting to prevent or minimise pollution damage, and the owner is accordingly placed in the same position with respect to claims against the Fund as other plaintiffs.[73]

The obligation of the Fund to pay compensation is limited in several respects. No compensation is payable if the damage resulted from *force majeure* or was caused by oil which escaped from a Government ship on non-commercial service.[74] A second exception bars

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Liability Convention) expressly includes the territorial sea of a Contracting State, it is reasonable to assume that "in the U.K." in the present Act includes the territorial sea.

71. S. 4(1); Fund Convention, Article 4. The exceptions which bar recovery under the Merchant Shipping (Oil Pollution) Act 1971 are discussed above at pp. 396 *et seq*.

72. S. 4(2).

73. S. 4(6); Fund Convention, Article 4(1).

74. S. 4(7)(a); Fund Convention, Article 4(2)(a).

recovery if the claimant cannot prove that the damage was caused by a ship which he has identified.[75] The latter exception was included in the Act to restrict its application to ships, as distinguished from "natural causes."[76] The requirement that the offending ship be identified has caused considerable concern, however. It is frequently not possible to identify the origin of an oil slick which nevertheless may cause damage to the coast.[77] The Fund may therefore offer no relief to *bona fide* victims of oil pollution damage in many cases.[78]

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75. S. 4(7)(b); Convention Fund, Article 4(2)(b).

76. A Government spokesman explained that S. 4(7)(b) was included in the Act because "the Fund is not designed to pay for pollution damage arising from what one might call natural causes, from oil seepage or from fractured oil pipelines, either on the ship or under the sea." *Hansard*, H.L. Vol. 351, col. 1277, 20 May 1974. Although it is correct to assert that the Fund is restricted to oil pollution damage resulting from vessels, the proffered explanation does not deal with the question of why identification of an offender should be a prerequisite to recovery. The reason S. 4(7)(b) is in the Act is because it is in the Fund Convention (Article 4(2)(b)), and, as has been emphasised, H.M.G. cannot deviate in any important particular from a Convention and still ratify it without reservation. This provision was included in the Convention because that instrument was not intended to be an insurance policy available to victims for damage however caused, but to offer an increased degree of protection from that formerly available. The Fund itself may proceed against the offender, and indeed, as discussed below, it acquires by subrogation the rights of one who has been compensated. A minor error in the Government's explanation also merits a brief comment: "natural causes" is a particularly unhappy phrase, for one major feature of the Fund is that it compensates victims of pollution caused by "an exceptional, inevitable and irresistible phenomenon"--surely a "natural cause," and a cause which excludes recovery under the Civil Liability Convention and the Merchant Shipping (Oil Pollution) Act 1971.

77. Advisory Committee on Oil Pollution of the Sea (ACOPS), *Annual Report* (1974), p. 8.

78. Technology may reduce the problem of vessel identification somewhat. In a recent case, the U.S. Coast Guard and the U.S.

Fund liability may be limited if it is proved that the pollution damage resulted from an act or omission of the victim.[79] However this exception is balanced by the exclusion of another: the Fund is liable even for loss or damage caused by acts of God. In this respect, the Fund moves toward absolute from strict liability.

The compensation payable from the Fund for any one incident is limited to that necessary to bring the total of the Fund and the Civil Liability Convention to a maximum of 450 million francs.[80] This could range from 240 million francs if the maximum allowable recovery under the Convention were allowed, to the entire 450 million francs if, for example, the person liable under the Convention could pay nothing or the Convention did not apply because the damage resulted

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Environmental Protection Agency combined to discover the "chemical fingerprints" of the oil which polluted Florida beaches. Through the use of spectrofluorometry, thin-layer chromotography and a technique with iodine, the results of 741 separate tests indicated the identity of the offending vessel. When the tanker docked at Philadelphia, the captain was arrested. *International Herald Tribune*, 10 November 1975, p. 1. The time and expense involved in such detective work limit the value of this approach. The limits of technology describe what is practical, and must therefore be considered by legal draftsmen.

79. S. 4(8); Fund Convention, Article 4(3). This exception applies only to the victim; the Merchant Shipping (Oil Pollution) Act 1971 is narrower in that damage caused by anyone who intended the consequences of his act may not recover from the owner under the 1971 Act, but could under the 1974 Act. Both Acts include contributory negligence provisions, but the 1971 Act is slightly more restrictive in this respect too, in that the negligence of certain Government authorities may bar a claim against the owner. S. 2(c).

80. S. 8(10); Fund Convention, Article 4. The Assembly of the Fund may raise the maximum to 900 million francs, although it has not yet done so. Article 4(6) of the Fund Convention. The 30-40 million Special Drawing Right liability limit of the Seabed Civil Liability Convention may influence the Assembly to raise Fund Convention limits.

from an act of God.[81] Where the amount of established claims against the Fund exceeds the maximum allowable compensation each plaintiff shall have his claim diminished *pro rata*.[82]

3. Indemnification of shipowners

It may be recalled that one purpose for which the Fund was established was to relieve shipowners from the financial burden imposed by the Convention.[83] This section of the Act fulfills that objective. S. 5(1) provides that where a shipowner is liable under the Act, he (or his guarantor) may be indemnified for that portion of his aggregate liability which is between 1500 and 2000 francs for each ton of the ship's tonnage or between 125 and 210 million francs, whichever is less.[84] The owner may not claim the benefit provided by this Article if the pollution damage resulted from his own wilful misconduct or if the Fund proves that as a result of the actual fault or privity of the owner, the ship did not comply with certain Conventions which may be specified by Order and that the damage resulted from such non-compliance.[85] On the other hand, the owner may claim compensation for costs reasonably incurred in an effort to prevent or

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81. S. 4(1) of the 1974 Act; Fund Convention, Article 4. It will be recalled that under the Merchant Shipping (Oil Pollution) Act 1971 and the Civil Liability Convention, liability may not exceed 210 million francs.

82. Fund Convention, Article 4(5). No express provision is made for this situation in the Act.

83. Fund Convention, Article 2(1)(b).

84. S. 5(1); Fund Convention, Article 5(1).

85. S. 5(3), (4), (5); Fund Convention, Article 5(1), (3). The owner may recover even if the damage was caused by the wilful misconduct of an employee.

minimise pollution damage.[86]

4. Supplemental

S. 6 of the Act concerns jurisdiction and the effect of judgments. Pursuant to that Section it is provided that Admiralty jurisdiction shall apply to any claim under Part I of the Act. When a judgment has become final and enforceable, it is conclusive evidence of a claim upon the Fund. Detailed provision is also made for reciprocal enforcement of the Act with other Convention countries. The Act provides in S. 7 for a statute of limitations within which a claim against the Fund must be brought: no such action may be entertained by a U.K. court unless it is commenced or third-party notice[87] given within three years after it arose or six years after it occurred.[88] There is, however, an exception provided for indemnity actions. In such cases, the owner and guarantor may bring an action within six months from the date that person first learned of his possible liability under the Act, notwithstanding the fact that the claim may have been made or the damage occurred outside the time limits described above. S. 8 provides that the Fund acquires by subrogation the rights of one reimbursed because of default by the owner or guarantor. There is a similar provision for a U.K. public authority to acquire the rights against the Fund of one to whom it has paid compensation for oil pollution damage.[89]

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86. S. 5(7); Fund Convention, Article 5(7).

87. "Third-party notice" is that which is given the Fund in respect of proceedings against an owner or guarantor. S. 7(1).

88. S. 7; Fund Convention, Article 6.

89. S. 8(4).

CHAPTER EIGHT

NORWEGIAN LAW REGULATING POLLUTION FROM SEABED OPERATIONS

A. Introduction

In Norway, as in the U.K., the discovery of gas in the Netherlands' Groningen Field at the end of the 1950s aroused speculation that similar hydrocarbon deposits might be contained in the continental shelf beneath the North Sea. In 1962, the first oil company approached the Norwegian Government requesting permission to begin exploration off the Norwegian coast; however, permission was refused as it was intended that a thorough study should precede any action.[1] It seems likely that a further and unarticulated reason for delay was the desire to enact legislation based on findings of the study before authorising offshore operations. The following year a Royal Decree and an Act became the first Norwegian law specifically directed to the subject of offshore natural resource development. These instruments, like the U.K. Continental Shelf Act which followed in less than a year, were intended to incorporate into municipal law the sovereign rights over continental shelf natural resources which international law conferred upon coastal States. Such limited sovereignty would permit the assertion of functional jurisdiction over offshore petroleum development activities.

Three preliminary comments may assist in the understanding of the Norwegian regulatory system concerning the control of pollution from the development of seabed petroleum resources. These concern factors

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1. The Ministry of Industry, *Report No. 30 to the Norwegian Storting* (1973-74). Unofficial translation from Norwegian concerning "Operations on the Norwegian Continental Shelf etc.," para. 1.2, at pp. 5 and 6. (Hereafter, *Report No. 30.*)

influencing the development of Norwegian law, the Norwegian "dualistic" system of law, and the interpretation of Norwegian law.

1. Factors influencing the development of Norwegian law

As observed in Chapter One, Norway is one of the world's richest nations and can afford to concentrate on deliberate development of North Sea oil in the context of the total Norwegian society. It might also be observed that, although Norway is a Party to NATO and the OECD, she is not a Member of the EEC. Thus, to the extent that the two former organisations seek to influence the policies of their Members (for example, in making energy available to States Parties), Norway is in the same position as the U.K. On the other hand, Norway clearly has greater freedom in setting economic policy than does Britain. Finally, it should be observed that although the unresolved continental shelf delimitation problems which Norway has with the Soviet Union are similar to those she has with the U.K. (and which the U.K. has with France and Ireland), the issue of security is uniquely relevant to the north of Norway and must be considered in any legislation.

2. The Norwegian dualistic system of law

Norway has a "dualistic" municipal law system; it is thus necessary to ensure that Norwegian law is consistent with treaties to which that State will become Party.[2] Although, as observed above, the majority

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2. McNair, A., "The Method Whereby International Law is Made to Prevail in Municipal Courts on an Issue of International Law," 30 *Transactions of the Grotius Society for the Year 1944* 11-49 (1945), especially the comments of Professor Raestad concerning Norway; Hambro, E., "Some Remarks About the Relations Between Municipal Law and International Law in Norway," 19 *Acta Scandinavica Juris Gentium* 3-27 (1949), at p. 4; Smith, Carsten, "International Law in Norwegian Courts," 12 *Scandinavian Studies in Law* 150-201 (1968), pp. 176-177; interview with Byråsjef Karin M. Bruzelius, Justisdepartementet, 26 November 1976.

view is that failure of national law to conform to a treaty is not of itself a breach of international law,[3] the Norwegian constitution requires that such consistency be effected *before* a treaty can be ratified.[4] This may at times result in State assertion of claimed rights before they are actually conferred by the ratified convention. Support for such claims must then be sought in customary law if they are to be considered consistent with the international legal system.

It will be noted from Table VIII-1 on the following page that the Norwegian Government did not accede to the Geneva Convention on the Continental Shelf until 9 September 1971, some eight years *after* claiming sovereign rights over the adjacent continental shelf. Why did the Norwegian Government hesitate to accept a Convention which appears supportive of their continental shelf claims? The precise reason may never be known. It seems clear, however, that concern over the effect of the 200-metre depth criterion on continental shelf delimitation was largely responsible. It will be recalled that the Norwegian Trough exceeds this depth in places, and is located quite close to the Norwegian coastline. The dual delimitation criteria contained in Article 1 of the Continental Shelf Convention provide that the continental shelf includes

> "the seabed and subsoil of the submarine areas adjacent to the coast but outside the area of the territorial sea, to a depth of 200 metres or, beyond that limit, to where the depth of the superjacent waters admits of the exploitation of the said areas .... ."

Were Norway to accept the Continental Shelf Convention, her bargaining

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3. See above, at pp. 276, 278.

4. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.

TABLE VIII-1

NORWEGIAN ACCEPTANCE OF POLLUTION CONTROL CONVENTIONS

Convention	Signed	Ratified/ Acceded	Relevant Norwegian Law
Geneva Continental Shelf 1958		9-9-71	Decree of 31 May 1963 Act of 21 June 1963 Decree of 8 December 1972 Decree of 3 October 1975 Decree of 9 July 1976
IMCO 1954	12-5-54	21-1-57	Regulations of 10 May 1967
IMCO 1962 Amendments		7-8-63	Regulations of 10 May 1967
IMCO 1969 Amendments		29-6-71	Regulations planned for 1 September 1977
IMCO 1971 Amendments (Tanks)		13-8-74	Regulations planned for 1 September 1977
IMCO 1973			Draft Act due in December 1976; will be new Chapter in Act of 9 June 1903, No. 7
Intervention		29-6-71	Regulations of 2 May 1975
Intervention Protocol			
Oslo Dumping	15-2-72	2-6-72	Regulations of 14 July 1972
London Dumping	29-12-72	4-7-74	Regulations of 14 July 1972
Paris 1974	11-10-76		Act of 26 June 1970
Bonn	9-6-69	28-9-70	None needed
Nordic 1971	16-9-71	Not necessary	None needed

position *vis à vis* the U.K. and Denmark might have been weakened. Beyond sections of the Norwegian Trough which exceeded 200 metres the Norwegian claim to additional submarine areas would have rested solely upon the exploitability criterion. Should Norway have failed to persuade her North Sea neighbours that such resources as might be found beyond the Norwegian Trough would indeed be exploitable,[5] her shelf would have been greatly reduced. Information which the Norwegian Government might have had concerning promising geological structures near the present U.K.-Norwegian median line could only increase their caution. Hindsight confirms the wisdom of the Norwegian approach: Figure III-1 on page 125 is sufficient to illustrate that nearly all the great hydrocarbon deposits discovered to date in the U.K. and Norwegian areas are near the present median line--but such major fields as Ekofisk, Frigg and Statfjord would have been well within the U.K. sector had Norwegian sovereign rights over the seabed been limited to areas landward of the Trough.

The question of the legality of the Norwegian claim remains to be considered: were the sovereign rights claimed consistent with international customary law in 1963? The continental shelf doctrine was discussed above in connection with the evolution of the law between 1951 (*The Abu Dhabi Arbitration*) and 1969 (*The North Sea Continental Shelf Cases*).[6] The case for asserting sovereign rights over the adjacent continental shelf based on custom was strengthened somewhat following

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5. Professor E.D. Brown has suggested that exploitability must be interpreted as meaning "economic exploitability." Brown, E.D., *The Legal Regime of Hydrospace*, Stevens and Sons, London (1971) at pp. 7-8.

6. See above, at p. 95.

the 1958 Geneva Continental Shelf Convention. A coastal State could cite the Convention as evidence of a generally accepted norm of international customary law.[7]

The case that an embryonic customary law of coastal State continental shelf rights had matured sufficiently to support the Norwegian claims is supported by the fact that the "interested" North Sea States did not protest. The U.K., certainly the most "interested" of these States, was well aware of the implications of silence in relation to unilateral claims, as a result of the decision against her in the *Fisheries Case* involving the issue of straight baselines. In 1951, the I.C.J. had found the Norwegian claim of a territorial sea measured from straight baselines "not inconsistent with international law" in part because the U.K. had not registered sufficient protest.[8] Another inference which may be drawn from British silence regarding delimitation of the continental shelf is that, even though there might not have been clear support in international law for the Norwegian claim, neither was the claim patently a violation of international norms. It is suggested that this view, complemented by an understandable desire to be a "good neighbour" to Norway and not get involved in a second *Fisheries Case* explains the absence of U.K. protest.[9] As customary law requires at

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7. This argument would lose much of its force as time passed and it became evident that few of the world's growing community of States believed strongly enough in the Convention's provisions to ratify or accede to it.

8. In the words of the I.C.J., "for a period of more than 60 years the United Kingdom itself in no way contested" the Norwegian establishment of a system of straight baselines. *Anglo-Norwegian Fisheries Case, I.C.J. Reports* (1951) p. 116, at p. 138.

9. A cynic might add that a British "good neighbour policy" of that period would have been uncomplicated by considerations of central

the very least an *opinio juris*, or belief that a proposition is legally binding, the explanation offered for U.K. failure to protest does not support a finding of customary law: the U.K. did not so much believe that the Norwegian claim was legal as suspect that an international tribunal would find it not illegal; this uncertainty plus the realities of practical politics tipped the balance towards acquiescence.[10] In so believing, the U.K. knowingly accepted the Norwegian claim and knowingly accepted the consequences. One consequence was that it would thereafter be futile to assert that an accepted *fait accompli* was inconsistent with customary law. Sometime after the U.K. acquired knowledge of the Norwegian law--whether planned or in force--what may have been a belief founded on a mixture of politics and obedience to legal norms became dominated by the latter, and a true *opinio juris* that Norway had customary law sovereign rights over the natural resources of her continental shelf emerged. *When* this occurred is impossible to say.

The Norwegian dualistic system and Norway's generally wide acceptance of conventions relevant to the control of marine pollution combine to ensure that Norwegian law in this respect is very much the child of the international legal regime--even when the latter is not yet clear. This conclusion is supported by Tables VIII-1 and IX-1 (on pages 421 and 492), which tabulate accepted conventions and relevant legislation, and Appendices III and IV which list all Norwegian law pertinent to this

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North Sea field ownership and the importance of North Sea oil to the British economy and its political significance in the following decades.

10. In the *Fisheries Case*, Norway had asked the Court to decide that straight baselines were *not* inconsistent with international law, a construction which relieved that State from the burden of proving that the method of delimitation *was* valid.

thesis. It is readily apparent that there is little Norwegian marine pollution control legislation which is not based on an international convention. Indeed, the major exceptions to this observation, legislation concerned with pollution from seabed operations and civil liability, will soon be replaced by laws to implement the proposed Convention on Safety and Pollution Safeguards in the Development of North-West European Offshore Mineral Resources and the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration and Exploitation of Seabed Mineral Resources in order to ensure conformity with international law.

3. The interpretation of Norwegian law

The third point concerns the language employed in Norwegian law. English translations of Norwegian law are characterised by broad language and vague terms. However, Norwegian authorities do not think that drafting which might be criticised as "too loose" to provide guidance for those required to comply or to permit strict enforcement has inhibited legal protection of the environment. The following observations are relevant to this question.

1. The English translations faithfully reflect imprecise or generalised Norwegian drafting.[11]

2. Norwegian law is frequently written more broadly than a convention which it is to implement. If there is a question that the national law may exceed the authority granted by the convention, the Norwegian law will be interpreted so as to be limited by the international instrument.[12]

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11. Conversation with Mr. E.Ø. Poulsson, Counsellor, State Pollution Control Authority (SPCA), 10 November 1976. Mr. Poulsson thinks that the advantages of flexibility inherent in wide drafting exceed possible disadvantages in determining law application.

12. Conversation with Byråsjef Christian Hambro, Ministry of Environment, 12 November 1976.

3. Application of such law has not been impeded by drafting characteristics.[13]

In view of the above comments, discussion of textual ambiguities in Norwegian law will be confined to those having legal significance.

B. Pollution from Seabed Operations

1. The Royal Decree of 31st May 1963[14]

This Decree extends Norwegian "sovereignty" to explore for and exploit natural resources in submarine areas "outside the coast." This functional sovereignty applies "to such an extent as the depth of the sea permits the utilisation of natural deposits, but not beyond the median line" of other States. The Decree omits any reference to the depth criterion which, as observed above, may be an exclusion *ex abundanti cautela* intended to avoid any suggestion that the Norwegian Trough might impose an outer limit on the Norwegian shelf where it exceeds 200 metres. The language, "but not beyond the median line," is relevant to continental shelf delimitation negotiations north of the North Sea[15] and in respect of a possible

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13. Conversation with Mr. E.Ø. Poulsson, Counsellor, State Pollution Control Authority (SPCA), 10 November 1976.

14. Royal Ministry of Industry and Handicrafts, *Legislation concerning the Norwegian Continental Shelf with unofficial English translation*, (January 1973), (hereafter, *Norwegian Continental Shelf Legislation*), at p. 9.

15. By Royal Decree of 15 November 1974 a Norwegian delegation was appointed to begin negotiations with the U.S.S.R. concerning delimitation of the continental shelf between the two States beneath the Barents Sea. The agreement of 10 March 1965 concerning the continental shelf boundary between Norway and the U.K. applied only from the Danish/Norwegian/U.K. common boundary point in the south and up to 61° 44' 12" N. A recent Norwegian Report has described clarification of the continental shelf dividing line between 61° 44' 12" N. and 62° N. (the current northern limit of Norwegian licensing) as a matter of "immediate

EEZ including seabed resources.[16]

2. Act no. 12 of 21st June 1963 relating to Exploration for and Exploitation of Submarine Natural Resources[17]

Act no. 12 expands and clarifies the Royal Decree, and provides a statutory basis for the issuance of Regulations. Rights to submarine resources are vested in the State, exploration or exploitation rights in respect of such resources may be granted to Norwegian or foreign persons, and regulations may be issued concerning any rights

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urgency" and states that Norwegian authorities will seek negotiations with the U.K. "at the earliest opportunity." Norwegian Ministry of Industry, *Report No. 81 to the Storting* (1974-75) (unofficial translation), p. 26 (hereafter, *Report No. 81*). For a brief description of the Norwegian and Russian positions concerning Barents Sea continental shelf delimitation (median line principle v. sector principle) see Leonard, R., "Norway: the Next Richest Nation," Survey, *The Economist*, 15-21 November 1975, especially pp. 20-24. Two other factors may affect the current negotiations concerning Barents Sea continental shelf delimitation: pursuant to the 1925 Spitsbergen Treaty (Cmd. 2092 (1924)), Norway has almost complete sovereignty over those islands. Russia is interested in Spitsbergen for strategic reasons, and although she has not made recent territorial claims, the Norwegians are worried lest a series of small Soviet encroachments result in a *de facto* condominium. It has also been suggested that Russian rights within Norway's newly-declared 200 mile economic zone were agreed upon considering Spitsbergen and competing claims concerning the Barents Sea continental shelf, and that the current negotiations concerning the latter are influenced by the other two interests. Conversation with Dr. Martin Saeter, Norwegian Institute of International Affairs, 9 November 1976.

16. The Norwegian "Economic Zone" declared in 1977 is concerned only with living resources, but the declaration contains a provision which authorises regulations to be made extending Norwegian jurisdiction to persons and vessels within the area. This provision clearly anticipates the emergence of a more comprehensive "economic zone" in international law as proposed in the RSNT. See the discussion of the Act of 17 December 1976 relating to the Economic Zone of Norway, below at p. 483. See also the comments on the emerging law of the sea, particularly with reference to the RSNT, above, at p. 145.

17. *Norwegian Continental Shelf Legislation*, p. 11. Pursuant to its S. 6, the Act entered into force immediately.

conferred.[18] Although exploration (reconnaissance) licences were issued immediately, the Norwegian policy of analysis before action delayed the award of production licences until 1965, following the promulgation of further rules for seabed operations and coincident with delimitation agreements setting the outer continental shelf boundaries.[19] The award of production licences in respect of specific blocks of the Norwegian continental shelf on 13 April 1965 was followed by similar licensing rounds on 21 May 1968, 12 July 1973, and 15 November 1974.[20] At present, production licences have been granted in respect of about 25 per cent. of the Norwegian continental shelf south of 62° N. latitude. No reconnaissance or production licences have yet been issued in respect of areas north of 62° N., but this will soon change as drilling is planned off both Troms/Vest-Finnmark and Møre/Trøndelag in 1978.[21] Drilling in these two areas, the former in the north of Norway between 69° and 72° N., and the latter farther south

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18. Appendix III lists the relevant Decrees and Regulations which are based on the 1963 Act. Outside the scope of this thesis, but perhaps of interest to some readers, is the Royal Decree July 9, 1976 Relating to Protection of Workers Etc. in Activities Associated with Exploration and Exploitation of Submarine Petroleum Resources, available in unofficial English translation from the Norwegian Ministry of Industry.

19. The 1965 production licences were granted pursuant to the provisions of the Royal Decree of 9th April 1965. The 1965 Decree was replaced by the Royal Decree of 8th December 1972 relating to development of seabed resources. *Report No. 30*, para. 2.1, p. 6.

20. *Ibid.*, at p. 6; *Report No. 81*, para. 1, p. 19. Production licences have also been granted for two blocks without formal announcement. *Report No. 30*, para. 2.3, p. 8.

21. Ministry of Industry, *Report No. 91 to the Norwegian Storting* (1975-76), "Petroleum Exploration North of 62° N.," (unofficial translation) (hereafter, *Report No. 91*), paras. 3 and 4, pp. 6 and 7.

at between 62° and 66° N., has been delayed pending completion of an investigation into the "level of risk" which can be expected from such activity.[22] The Ministry of Industry has now published its findings in a recent Report, concluding that the "level of risk" (comprising the technical and safety aspects of the projected operations, plus the consequences for the community and environment) is acceptable.[23] The investigation was particularly concerned with the effects of a blowout during the winter and spring when large concentrations of fish fry and larvae pass through the area. It was concluded, however, that "harmful effects would be of a transitory nature even should they affect an entire age group" and that not only is there "little likelihood of a big blowout," but by permitting drilling only in the summer even this risk would be minimised.[24] The Report asserts that

> "careful supervision will be exercised by the authorities from the very beginning to ensure compliance with the rules in force to prevent befouling of the seabed."[25]

In view of the recent discoveries of the extent of oil-related debris on the continental shelf south of 62° N., it seems likely that the Norwegian Petroleum Directorate will be very careful indeed to fulfil this promise by their Ministry, and that Statoil and the other companies involved will also conscientiously strive to avoid such pollution, if only to avoid additional bad publicity.[26]

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22. The areas are illustrated in *Report No. 81*, Map Appendices 3 and 4, pp. 60 and 61.

23. *Report No. 91*, para. 11, pp. 17 and 18.

24. *Ibid.*

25. *Ibid.*

26. See below, at p. 444 and footnote 83.

a) Royal Decree of 8th December 1972 relating to Exploration for and Exploitation of Petroleum in the Seabed and Substrata of the Norwegian Continental Shelf[27]

This Decree is primarily concerned with licences for exploration and exploitation of seabed petroleum[28] resources on the continental shelf and in national waters. Three types of licence are available: reconnaissance, production, and licences for installations other than production facilities, for example, storage installations, liquefaction installations, installations for production of electricity, pipelines, shipment installations, and electric cables.[29]

Reconnaissance licences, corresponding to the U.K. exploration licences, may be granted to Norwegian or foreign companies and entitle the recipient to prospect for petroleum in stipulated areas for a period of three years.[30] A reconnaissance licence does not grant exclusive

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27. *Norwegian Continental Shelf Legislation*, pp. 109-159. This Decree was made under the authority of the Act of 21st June 1963. Pursuant to its S. 60, the Decree entered into force immediately.

28. The comprehensive definition of "petroleum" includes "all liquid and gaseous hydrocarbons existing in their natural state in the sub-strata as well as all other substances, including sulphur, produced as a by-product in extraction of such hydrocarbons." S. 2(1).

29. S. 3. The terms of licences required for installations, pipelines, etc. are determined by the Ministry in each case. *Report No. 30*, para. 2.1, p. 7. Norwegian authorities had control over offshore installations and pipelines under the 1965 Decree which the present Decree replaced, although licences were not required. Sections 36 and 37 of the 1972 Decree complement the licensing requirement, providing, *inter alia*, for Ministerial control of installation siting and pipeline use. Norwegian legislation empowering Government control of pipelines on the continental shelf thus existed a decade before the U.K. enacted comparable legislation in the Petroleum and Submarine Pipelines Act 1975.

30. Sections 4, 6, 8. A reconnaissance licence does not apply to areas subject to a production licence, and is in this respect identical to a U.K. exploration licence which applies to "seaward areas" except those for which production licences have been granted.

exploration rights nor does it confer prior rights to exploit any find.[31] The methods by which the licensee may conduct his survey are specified, drilling being expressly prohibited.[32] As of 1974-75, a total of 53 petroleum reconnaissance licences had been granted.[33]

Production licences may be granted to companies which have been established in conformity with Norwegian law and which have their principal seat of business in Norway.[34] Production licences are issued on the basis of detailed information submitted in an application which may or may not have been invited by the Ministry.[35] A production licensee has exclusive rights of petroleum exploration and exploitation

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Reconnaissance licences are awarded by the Norwegian Petroleum Directorate, an organisation which reports to the Petroleum and Mining Department of the Ministry of Industry. *Report No. 30*, Appendices 5 and 6, pp. 85 and 86.

31. S. 8.

32. S. 7. Even though drilling is forbidden, the Decree of 25th August 1967 relating to safe practice, etc. in exploration and drilling for submarine petroleum resources is expressly made to apply. S. 9(2). (The 1967 Decree has been replaced by the Decree of 3rd October 1975, discussed immediately below in the text.) Reconnaissance licensees are therefore particularly affected by Chapter II, "Reconnaissance," in the 1975 Decree.

33. *Report No. 30*, Appendix 2, p. 79; *Report No. 81*, Appendix 4, p. 50.

34. S. 11(1). Production licences are awarded by the Ministry of Industry, Petroleum Negotiation Division. *Report No. 30*, Appendix 5, p. 85.

35. Sections 12 and 13. S. 14 enumerates the items which must be included in an application for a production licence; this is primarily information concerning the applicant company. S. 17 provides that no production licence may be granted until the Ministry approves a work programme. It is evident that the Ministry weighs a large number of other factors as well. For example, in late 1973 the Norwegians were much concerned to award production licences in areas which would require the development of deepwater technology, possible landing of produced petroleum in Norway, and geological information which would increase knowledge of formations

in the licensed area for a six-year period.[36] The licence may then be extended for an additional thirty years, but only in respect of not more than one-half of the original area.[37]

Produced petroleum must be landed in Norway unless the King[38] approves another landing point.[39] Because of the depth of the Norwegian Trough, an exception has been made for petroleum from the Ekofisk and

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in the area immediately north of 62° N. A second factor was the desire to protect Norwegian interests by rapid assessment and development of the blocks adjacent to those which the British had started to drill. *Report No. 81*, para. 1, p. 20.

36. S. 15. The areas for which applications may be made are divided into blocks measuring 15 minutes latitude by 20 minutes longitude, S. 12. If a petroleum deposit extends across the boundaries of two or more concession areas, and if the licensees cannot agree on an exploitation scheme, the Ministry may stipulate one, S. 32. Such an agreement has been concluded among the Norwegian licensees in the Ekofisk Field. Ministry of Industry, *Report No. 90 to the Norwegian Storting* (1974-75), "Landing of Petroleum from the Eldfisk, Edda and Albuskjell Fields and from Parts of the Tor Field in the Ekofisk Area," (unofficial translation) (hereafter, *Report No. 90: Landing of Petroleum from Various Ekofisk Fields*) para. 5, pp. 11-13. It should be noted that S. 32 refers to Norwegian licensees exclusively; unitization agreements among U.K. and Norwegian licensees in the Frigg Field have been concluded pursuant to Article 4 of the Boundary Treaty between the U.K. and Norway. Ministry of Industry, *Report No. 77 to the Norwegian Storting* (1973-74), "Landing of Gas from the Frigg-area," (hereafter, *Report No. 77*), paras. 3 and 4, pp. 9 and 10. Temporary agreements relating to costs until start of production (estimated for 1977-78) have been concluded among U.K. and Norwegian licensees of the Statfjord Field. Ministry of Industry, *Report No. 90 to the Storting* (1975-76), "The development and landing of petroleum from the Statfjord Field and a gas trunkline," (unofficial translation) (hereafter, *Report No. 90: Statfjord Petroleum Development*), para. 5, pp. 14-15. See also above, pp. 123, 138, for a discussion of the delimitation of the U.K. and Norwegian sectors, and the Agreement between the U.K. and Norway concerning the Frigg Field.

37. Sections 20, 22.

38. The "King" actually means the Cabinet; thus, approval is required not only by the Ministry of Industry, but by the entire Government.

39. S. 34.

Frigg Fields which is piped to the U.K. and Germany pursuant to international Agreement.[40] Ekofisk petroleum is transshipped by dedicated tanker[41] from Teesside to Norway, and it was a condition of the permission given by the Ministry of Industry to land Frigg gas in Scotland that a specified quantity of gas be transshipped to Norway.[42] Advances in deepwater pipeline technology have now made it feasible to cross the Norwegian Trough with relatively small diameter (16 - 24

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40. The Ekofisk and Frigg Agreements are discussed above, at pp. 137 *et seq.* Detailed accounts of landing of petroleum from Norwegian fields may be found in (unofficial English translations): *Report No. 51 to the Norwegian Storting* (1972-73), "Landing of petroleum from the Ekofisk area," (hereafter, *Report No. 51*); *Report No. 77; Report No. 90: Landing of Petroleum from Various Ekofisk Fields; Report No. 90: Statfjord Petroleum Development.*

41. A "dedicated" tanker operates in a closed pattern. The tankers now used to transport petroleum from the Ekofisk terminal at Teesside, England, to Norway transported oil directly from the Ekofisk Field to Norway before completion of the pipeline. These tankers have segregated ballast tanks, a necessity for loading at Ekofisk because there was no offshore provision for oily ballast water, and still required because the oil reception facilities at Teesside are inadequate. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976. See also, Hendrickson, H., "Onshore Experience - Phillips Petroleum Company Teesside Operations," a paper presented to the Heriot-Watt University Institute of Offshore Engineering, 22-23 June 1976, "The Separation of Oil from Water for North Sea Operations."

42. *Report No. 77*, p. 3. The Petronord Group (the licensees) will be required to land in Norway up to 2.5 thousand million normal cubic metres (hereafter Nm^3) of gas per year for a fixed period, at a price set by the Ministry of Industry, and must also finance, build and operate a transportation system to transport this quantity of gas to Norway. The possibility of transporting gas from the Statfjord Field and other fields on the Norwegian continental shelf to Britain and the Continent via a trunk collecting line (which would require international agreements) is being actively considered. Because of Norway's abundance of hydroelectric power, there is at present no use of natural gas in that country, although there are plans for a large petro-chemical complex in Bamble. *Report No. 90: Statfjord Petroleum Development*, Part II, "Gas trunk line," pp. 37-46; *Report No. 90: Landing of Petroleum from Various Ekofisk*

inch) pipelines.[43] This course of action is contemplated for the Statfjord field to replace tanker transport direct to Norway.[44]

Pipelines and other offshore installations are subject to regulations pursuant to the 1972 Decree as well as to control imposed by licence. The Ministry is given authority to control installation siting, and it is expressly provided that such pipelines or installations may be made available to other users.[45] These provisions thus give the Ministry legal means to minimise conflict with other users of the sea as well as to protect the marine environment.

A substantial part of the Decree concerns the regulation of seabed operations. It is provided that the Ministry may issue further rules in respect of a number of subjects, including the prevention of

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Fields, para. 6, "Plans for the Use of NGL [natural gas liquids] in Norway," pp. 13-15; Note, "Petrochemicals in Scandinavia," *Noroil* (No. 4) (1974), pp. 27-30.

43. Norwegian Deep Water Pipeline Project Committee, English translation of the main conclusions of a report (November 1974). (The official Report, in Norwegian, is "*NOU 1974: 40*, Rørledninger på dypt vann.") See also, Note, "Spanning Norway's trench only a matter of time--and money," *Offshore Engineer* (September, 1975), p. 60. Lack of new technology enabling pipeline repairs (now done by divers) and facilitating burial limits pipe laying in deep water. Note, *Noroil* (No. 6) (1974), pp. 25-28, at p. 25.

44. *Report No. 90: Statfjord Petroleum Development*; conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976. For a discussion of Storting debates on the landing of oil in Norway concluding that "it can at present safely be said that there are now very divided views in the Storting with regard to the question of landing oil in Norway being the best alternative on the long term," see Johannessen, K., "Landing of Oil and Gas from the Norwegian Continental Shelf," *Northern Offshore* (No. 9) (1976), pp. 13-18. See also, Note, "Pipelines: Technical Advances--Political Obstacles," *Noroil* (No. 12) (1974), pp. 51-55.

45. Sections 36, 37. The provisions which confer authority to control pipeline routing and use are similar to those found in the U.K. Petroleum and Submarine Pipelines Act 1975, above at p. 334.

pollution.[46] This authority is similar to that conferred upon the Ministry by the 1975 Decree relating to safe practices in *drilling* for submarine petroleum resources and the 1976 Decree relating to safe practice for the *production* of submarine petroleum resources.[47] S. 38 has not yet been used as authority for the issuance of subordinate Regulations intended to control marine pollution. At the time the 1972 Decree came into force, the 1967 Decree relating to safe drilling practices (now replaced by the 1975 Decree) provided the necessary authority to issue such regulations. Regulations for production of petroleum are being developed pursuant to the 1976 Decree on production safety. Prior to 1976, safety controls for production installations were exercised pursuant to S. 58 of this (the 1972) Decree (a general authority to regulate as may be necessary to implement the Decree) and application of appropriate provisions from the 1967 Decree relating to safe practices in drilling.[48]

S. 39 implements Continental Shelf Convention Article 5(1) by requiring that seabed operations be conducted prudently, "and must not

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46. Section 38. This authority includes the promulgation of rules concerned with installation building and siting, drilling, plugging of wells, preventive measures against pollution, measures to protect other users and oceanic living resources, and safety measures of all types.

47. The Royal Decree of 3rd October 1975, Relating to Safe Practices Etc. in Exploration and Drilling for Submarine Petroleum Resources, replacing a 1967 Decree of the same name; the Royal Decree of July 9, 1976, Relating to Safe Practice for the Production Etc. of Submarine Petroleum Resources. Both of these Decrees are discussed immediately below in the text.

48. *Report No. 30*, p. 27; Vogt, N., "Safety Regulations for the Petroleum Activities in the North Sea," a paper presented to Offshore North Sea Technological Conference and Exhibition, Stavanger (3-6 September 1974), at p. 4. Production licence terms should ensure that the licensee's activities do not unreasonably

unreasonably interfere with other activities." Navigation and fishing are expressly protected by the requirement that special care be exercised to ensure that these competing uses of the sea are not unreasonably "obstructed or impeded" by exploration or exploitation activities.

To supervise this and other provisions of the 1972 Decree, the Ministry may appoint inspectors[49] who have access to installations at any time, and to all relevant materials and data as well.[50] The Ministry has delegated powers of inspection to its subordinate body, the Petroleum Directorate, which maintains a staff of inspectors concerned primarily with the safety and technological aspects of drilling and production, but which is also utilised to some extent by the Ministry of Environment for duties more closely related to pollution control, such as monitoring the discharge of effluent from production installations.[51] Inspectors are empowered to halt drilling operations in cases of serious violations, a provision also found in the 1975 Decree concerning drilling safety as well as Regulations enacted thereto.[52]

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interfere with other users of the sea or cause injury to the marine environment. *Report No. 81*, Appendix 7, pp. 53-54, "Petroleum Production licence granted 15th November 1974," S. 8.

49. Section 45.

50. Access is not expressly qualified by "at reasonable times" as it is in Model Clauses 33 and 34 of Schedule 5 of the U.K. Petroleum (Production) Regulations 1976. See above, p. 305.

51. Conversation with Byråsjef Christian Hambro, Ministry of Environment, 12 November 1976; conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976. Mr. Hambro indicated that the Ministry of Environment was considering the question of how best to monitor offshore pollution prevention regulations, and may increase its own capacity to inspect.

52. Section 45. Royal Decree of 3rd October 1975, Relating to Safe Practices Etc. in Exploration and Drilling for Submarine Petroleum

S. 47 incorporates Continental Shelf Convention Article 5, paragraphs 2 and 3, into the Norwegian legal system. S. 47 provides for a 500-metre safety zone around any temporary or permanent installation, including pumps, storage installations and shipment facilities, but excluding pipelines and cables.[53] As in U.K. legislation, the unauthorised entry of vessels and aircraft into the safety zone is prohibited.[54] The U.K. and Norwegian systems are also similar in that national law applies to both installations and the safety zones which encompass them.[55] However, application of Norwegian law to safety zones raises

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Resources, Section 119; Regulations for Drilling for Petroleum, issued by the Norwegian Petroleum Directorate, 29th August 1975, Section 27. The Ministry may also, for adequate reasons, halt exploration, drilling, and production, Section 41. Section 45(7) of the 1972 Decree provides that the Ministry may require a vessel or a drilling platform to put into a Norwegian port "for inspection and control purposes or for other reasons." This provision would appear to conflict with the principle of flag State jurisdiction, if applied to a foreign flag vessel. The Norwegian Government would be unlikely to take such action, however, not only because it would be inconsistent with international customary law and invite retaliation against the considerable Norwegian merchant fleet, but because effective control over drilling vessels can be maintained through the terms of the licence.

53. This is consistent with the Continental Shelf Convention, Article 5(2), (3).

54. Section 47(2). See U.K. legislation above, at p. 285.

55. Section 53(2). Although this Section states, "Unless otherwise specified, Norwegian law shall apply to such installations as mentioned in Section 47 [that is, those with safety zones], and to activities carried out at such installations or facilities or within the established safety zone," it is not clear precisely which Norwegian laws may be so applied. The Justice Department, in interpreting S. 53(2), restricts application of Norwegian law "in cases where special rules have been issued according to the law's S. 3 [of the 1963 Act], or where the actual law itself says that it is not valid or where it according to the content and purpose of the law is obvious that it shall not be valid on the shelf." It has been held by the Norwegian Supreme Court that a criminal law which applied "within the Kingdom" applied to a theft by a Norwegian national committed on board a foreign drilling

a problem which differs in degree (though not in kind) from that discussed in connection with the U.K.: there is a general demand on the part of Norwegian offshore operators that safety zones circumscribe entire complexes, such as Ekofisk and Frigg, rather than individual installations.[56] Should this occur, the area of sea closed to other users would greatly expand. The Continental Shelf Convention does not address this issue expressly: it is provided merely that safety zones of 500 metres (as measured from the outer edges of the installation) may be established around installations and devices necessary for the exploration and exploitation of the continental shelf.[57] It is submitted that the legality of such extended zones must be assessed considering the circumstances which are relevant to the customary law (and High Seas Convention) criterion of "reasonable use."[58]

Safety zones are a recognised use of the sea which complement the generally accepted use of continental shelf natural resource development. A safety zone must justify its existence in relation to competing uses, and the stronger the other claims, the greater justification is

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platform located on the Norwegian continental shelf because of the "close contacts" between the platform and Norway. Bruzelius, K., "Jurisdiction Competence Concerning Mobile Drilling Platforms," a paper read at a seminar at the Scandinavian Institute of Maritime Law, University of Oslo, 19 March 1975. Translation of this paper from Norwegian was made possible by a grant from the Ford Foundation. The case mentioned in this footnote is reported in *Norsk Retstidende* nr. 57--1974, pp. 897-901 (in Norwegian).

56. Conversation with Mr. Peter Tronslin, Mobil Exploration, Norway, 24 November 1976. *Cf.* the view of U.K. operators that safety zones should be extended to 1,000 meters. *The Scotsman* 2 March 1977, p. 9.

57. Continental Shelf Convention, Article 5(2), (3).

58. See the discussion of "reasonable use" in connection with application of U.K. law to installations, the safety zone, and "the vicinity" of pipelines, above, at pp. 286, 335.

necessary. This consideration will assume increased significance as seabed development commences in the areas off Troms and West Finnmark--oceanic areas intensively used by Soviet submarines.[59]

It may be appropriate at this point to mention briefly the increased problems of monitoring and enforcement that will result from opening areas north of 62° N. to drilling and from the 200-mile Economic Zone which was established 1 January 1977. The organisation and resources needed to cope with the problems raised by offshore activities of increased intensity and geographic scope was the subject of a Norwegian Official Report,[60] which found, *inter alia*:

> 1. That the police must deal with illegal actions which do not originate with the military forces belonging to a foreign power. In the latter case, the assistance of the armed forces must be obtained.[61]

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59. See, for example, *The Economist*, *loc. cit.* in footnote 15; *Report No. 91*. The Frigg Field straddles the U.K.-Norwegian line of delimitation, the bridge from the quarters platform in the U.K. sector to a production platform in the Norwegian sector actually crossing it. The safety zone which is clearly necessary to protect both the "installations" is thus subject to U.K. and Norwegian law--each exclusive up to the median line. See the discussion of the Frigg Agreement, above at p. 138.

60. Ministry of Defence, *NOU 1975: 50*, "Surveillance of Fisheries and Petroleum Activities," (Chapter V), (hereafter, *NOU 1975: 50*). The Stavanger constable is responsible for law enforcement on the Norwegian continental shelf. The Report noted that, "(t)he Police today have limited possibilities, in purely practical terms, for putting any Police measures into effect on the continental shelf. The Police stations are situated far from the relevant locations. The Police are not equipped for such tasks, not having, for example, sea-going vessels or air transport." *Ibid.*, para. 1.5, p. 9.

61. *Ibid.*, para. 1.2, p. 5. Mrs. Elizabeth Young has pointed out the distinction between the authority of the police and the armed forces in respect of the problem of policing British waters and installations: the Royal Navy certainly has the authority to "keep the Queen's peace" offshore, but "the rights of the armed forces in relation to the whole panorama of criminal law are no different from yours or mine." Letter to *The Times*, 23 February 1976, p. 13.

2. The official monitoring institutions at present have only limited opportunities to inspect offshore operations without prior notice.[62]

3. As offshore operations increase, there will be an increasing risk of oil damage--a risk that the present system of emergency preparedness is inadequate to cope with.[63]

The Special Committee which prepared the Report came to the "principal conclusion" that

> "the Naval Fisheries Surveillance Service should be developed as a Coast Guard, as the central executive agency for an extensive--but limited--part of the State's functions on the continental shelf and in fisheries surveillance."[64]

S. 51 provides that

> "If damage or inconvenience is caused, the Norwegian law of torts shall be applicable. The tort feasor as well as his employer and the licensee shall be jointly and severally liable for any claim for compensation."

Although detailed consideration of the Norwegian law of civil liability will be deferred until the next chapter, a comment concerning this provision may be appropriate at this time. As Professor Fleischer has pointed out, if there is no specific legislation or convention applicable, compensation for pollution damage or other injury will be governed by the ordinary rules of civil liability.[65]

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62. *NOU 1975: 50*, para. 1.4, p. 7.

63. *Ibid.*, para. 1.9, p. 12.

64. *Ibid.*, para. 2.2, p. 15. As will become evident below, Norway is in the process of a major reorganisation in respect of pollution control.

65. Fleischer, C., "Liability for Oil Pollution Damage Resulting from Offshore Operations," *Scandinavian Studies in Law* 107-143 (in press), p. 107. Professor Flescher's latest paper expands and refines previous works: "Pollution from Seaborne Sources," in Churchill, R. (*et al.*) (eds.), *New Directions in the Law of the Sea*, Collected Papers--Vol. III, British Institute of Inter-

However, S. 51 is not limited to making this fact express: it also provides that the tortfeasor, his employer *and* the licensee shall be jointly and severally liable. This is thought to extend the Norwegian law of torts because it disregards the relationship between licensee and tortfeasor: it is no defence to plead that the tortfeasor was acting as an independent contractor.[66] S. 51 of the 1972 Decree has been complemented by S. 15 of the standard form of petroleum production licence issued from 15 November 1974 which expressly provides that the licensee assumes strict liability for pollution damages resulting from his activities, pending the coming into force of civil liability legislation.[67]

The final Sections of the 1972 Decree pertain to arbitration, venue, and licence revocation. S. 55 provides that whenever the 1972 Decree or a licence granted pursuant to it provides for arbitration, the proceedings will be according to a specified Norwegian code.[68] Only one Section of the Decree expressly authorises arbitration;[69] no such provisions appear in the new standard form production licence.

The venue for disputes which can be brought before a court is the

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national and Comparative Law, London (1973), pp. 24-78; "Liability and Compensation," a paper presented to Offshore North Sea Technological Conference and Exhibition, Stavanger (3-6 September 1974).

66. Discussions with research fellows at the Scandinavian Institute of Maritime Law, Oslo, November 1976; Act on Torts, 13 June 1969, No. 26 (in Norwegian).

67. *Report No. 81*, p. 54.

68. The Code of 13th August 1915, No. 6, relating to judicial procedure in civil cases, Chapter 32.

69. S. 37(3), relating to compensation to the owner of a pipeline by one who uses it, expressly refers to arbitration.

Oslo City Court.[70]

Violations of the Decree or Regulations issued pursuant thereto may be dealt with by licence revocation as well as penal sanctions.[71]

b) Royal Decree of 3rd October 1975 Relating to Safe Practice Etc. in Exploration and Drilling for Submarine Petroleum Resources[72]

This Decree concerns safety during exploration and drilling for petroleum in Norwegian waters and on the Norwegian continental shelf.[73] It replaces a 1967 Decree which was also directed at safety during the exploration and drilling phase of petroleum development. The original Decree was limited to exploration and drilling because production was still some years in the future[74] and it was desired to control the offshore activities that were presently occurring as quickly as possible.[75]

The 1967 Decree provided not only a framework for regulation of

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70. Section 56.

71. Section 57. In the event of proceedings to revoke a licence, the licensee has the right to be heard. Penal sanctions are set out in the Penal Code, Section 339, No. 2, (which is available in English): "Fines may be imposed upon anybody who .... 2) violates any regulation issued by the public authorities according to law and carrying a threat of punishment." Section 59. This Section also provides that should more severe penal sanctions be applicable, they will take precedence.

72. As amended by the Royal Decree of July 9 1976 Relating to Protection of Workers Etc. in Activities Associated with Exploration and Exploitation of Submarine Petroleum Resources. In force immediately, Section 121. This Section is also a saving clause for provisions of the 1967 Decree to the extent that they are not inconsistent with this Decree. The unofficial translation of the Decree of 3rd October 1975 is published by the Norwegian Ministry of Industry.

73. Section 1.

74. The first petroleum production in the Norwegian sector of the North Sea was from the Ekofisk Field in July, 1971.

75. *Report No. 30*, p. 27.

offshore safety, but in the absence of regulations, the Decree itself incorporated a great amount of detail. The 1975 Decree omits some of this detail, a streamlining made possible by the promulgation of Regulations pursuant to the earlier Decree.[76] Nevertheless, even relieved of such technical concerns as regulations for well casings[77] and a chapter on "Perforating,"[78] the inclusion of a new chapter, "Contingencies,"[79] results in a Decree that remains long and detailed.[80] The following description of the 1975 Decree and Regulations promulgated pursuant thereto will attempt to convey the essence of those

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76. Conversation with Mr. Peter Tronslin, Mobile Exploration, Norway, 24 November 1976. Two sets of Regulations of particular relevance to the control of marine pollution may be mentioned. The "Drilling regulations for petroleum in Norwegian internal waters, in Norwegian territorial waters and on the continental shelf which is under Norwegian sovereignty," (hereafter, Drilling Regulations) were issued by the Norwegian Petroleum Directorate, 29th August 1975, pursuant to Section 2(1) of the 1967 Decree and the delegation of authority made by the Ministry of Industry on 30th March 1973; they are available in an unofficial English translation from the Petroleum Directorate. The Norwegian Maritime Directorate issued "Regulations for Mobile Drilling Platforms with Installations and Equipment Used for Drilling for Petroleum in Norwegian Internal Waters, in Norwegian Territorial Waters and in that Part of the Continental Shelf which is Under Norwegian Sovereignty," (hereafter, Regulations for Mobile Drilling Platforms) on 10 September 1973, pursuant to Section 2(2) of the 1967 Decree and the delegation of authority made by the Ministry of Industry on 11th July 1969. They were amended 14 February and 1 August 1975, and 15 June 1976 and are available in unofficial translation, as amended, from the Maritime Directorate. The Drilling Regulations came into force 1 September 1975, pursuant to the provisions of S. 52; the Regulations for Mobile Drilling Platforms were effective when issued.

77. Sections 46-49 of the 1967 Decree.

78. Chapter X of the 1967 Decree.

79. Chapter IV of the 1975 Decree.

80. The 1967 Decree contained 128 provisions, the 1975 Decree 119. It was suggested to the writer by a Norwegian official that this Decree as well as the 1976 Decree regulating safety in petroleum

instruments, concentrating on those provisions which are most relevant to the control of marine pollution.

i) introductory provisions

S. 3, in requiring the licensee to comply with the Decree and Regulations issued thereto, expressly charges him with responsibility to ensure that *anyone* carrying out activities for him, "either personally or through employees or through independent contractors or subcontractors" complies with the provisions of this Decree.[81] This provision, although essentially unchanged from 1967, has still not been defined in practice. The problem raised is the extent to which the licensee should be held criminally liable for the acts of persons (such as independent contractors or even subcontractors) over whom he has little control. An example of this is provided by the recent case of two operators who are thought by the Petroleum Directorate to have violated Norwegian law[82] requiring them to keep the seabed free of debris. A Government inspection team using underwater television cameras found large quantities of scrap metal, concrete, etc. on the seabed near the sites of two early installations.[83]

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production did not go as far in transferring detail to Regulations as some of the committee drafting them would have liked.

81. Section 2(2) of the Drilling Regulations and Section 2(2) of the Regulations for Mobile Drilling Platforms expressly provide that it is the "obligation" of the licensee and anyone carrying out activities on the continental shelf to ensure that even independent contractors or subcontractors comply with those Regulations.

82. 1972 Decree, S. 39 (see above, p. 435); 1975 Decree, S. 4; Drilling Regulations, S. 3; 1976 Decree, Sections 5, 17 (see below, pp. 462, 465); plus the terms of the production licence (S. 8 in the standard form production licence granted 15 November 1974, see above, pp. 435, 436, at footnote 48).

83. A comprehensive account of the incident is given in *Aftenposten*,

The operators had produced certificates from diving companies attesting that the seabed was free of debris as required by law.[84] Would (and should) offshore operators be liable for the actions of the diving company in such a case?[85]

S. 4 implements Article 5(1) of the Continental Shelf Convention in prohibiting unreasonable interference with navigation or fishing, and requiring "special care" to avoid pollution.[86] These prohibitions are complemented by an affirmative duty to use "good oilfield practice" and to comply with regulations in force.[87] Relevant regulations have been made under the authority of this Decree as well as pursuant to the Seaworthiness Act. The Regulations for Drilling for Petroleum, issued by the Norwegian Petroleum Directorate on 29 August 1975 are of particular importance, mirroring many of the provisions

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15 November 1976, p. 5 (in Norwegian). A brief account in English may be found in *The Scotsman*, 15 November 1976, p. 3. The film was shown to the Norwegian public on television and generated considerable comment.

84. Conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976. Drilling Regulations S. 25, para. 2.9 requires the licensee to obtain such a certificate before abandoning a well.

85. Should the Government decide to prosecute the two operators, the question posed is likely to be answered. The possibility of criminal prosecution is being considered. Conversation with Mr. Nils Vogt, 24 November 1976. A similar provision is contained in the 1976 Decree concerned with production (S. 4).

86. "Pollution" is not defined. The Petroleum Directorate supervises activities on the continental shelf and determines, in consultation with other Government departments according to the circumstances, whether "pollution" has occurred.

87. The term "good oilfield practice" has been omitted from the 1975 Decree in a number of Sections in which it appeared in the 1967 instrument. Although the term is not defined in the Decree or the Drilling Regulations, good evidence of this industry standard is available in Institute of Petroleum, *Code of Safe Practice for*

in the Decree as well as providing detailed drilling requirements. S. 3 of the Drilling Regulations in fact is essentially the same as S. 4 of the Decree.[88] The Maritime Directorate has also promulgated Regulations for Mobile Drilling Platforms pursuant to authority conferred by this Decree.[89] These Regulations, which came into force on 10 September 1973 are primarily concerned with vessel safety aspects of mobile rigs. Several other sets of regulations have been made under this Decree and the Seaworthiness Act, but they are of peripheral relevance to control of marine pollution.[90]

Drilling and Production in Marine Areas, Applied Science Publishers Ltd., Essex (1972).

88. The Drilling Regulations are slightly narrower, applying to "drilling" whereas the Decree refers to "exploration and exploitation." It is questionable whether such duplication promotes observance of the law: is it preferable to include important provisions in two instruments to increase "impact?" Or does such duplication invite a prospective reader to ignore bulky material which he may think he has read before? The writer opts for the former view, reasoning that superior instruments which establish a framework and confer authority, complemented by detailed regulations, are not only more likely to be read and easier to understand, but also will facilitate such administrative duties as keeping requirements subject to rapid change up to date.

89. The Drilling Regulations and the Regulations for Mobile Drilling Platforms are described above, at footnote 76.

90. Regulations for manning of Norwegian mobile drilling platforms with installations and equipment used for drilling for submarine petroleum resources, and provisional regulations concerning qualification requirements for manning of drilling platforms, issued by the Norwegian Maritime Directorate on 28 February 1975. Regulations on the construction and operation of mobile drilling platforms with installations and equipment and which are registered or which are to be registered in the Norwegian Register of Ships, issued by the Maritime Directorate on 5 May 1975. (These Regulations set out construction standards and operating procedures for Norwegian-registered drilling platforms, regardless of where they will be operating. The framework essentially summarises the far more comprehensive provisions of the Regulations of 10 September 1973 which apply to drilling platforms on the

Several further provisions complement the general requirements of S. 4. The operator must submit an organisational plan for drilling platform[91] operation to the Ministry,[92] a provision clearly directed at preventing the organisational confusion which characterised the U.K.'s *Sea Gem* disaster.[93] The organisational plan must conform to the detailed requirements set forth in the Manning Regulations issued by the Maritime Directorate.[94] As in the U.K. Mineral Workings (Off-

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Norwegian continental shelf, regardless of State of registration. Possible conflicts with requirements imposed by the continental shelf State are minimised by Section 2(1) which provides that the Regulations apply to drilling platform operation "in so far as this does not cause violation of the coastal State's regulations relating to the actual drilling for petroleum resources." In practice, problems have not arisen because the Norwegian Regulations are more strict than those of the States with which a conflict of laws is possible. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.) Further regulations have been made by other Government departments concerning subjects not here relevant, for example, Regulations for Helicopter Decks on Drilling Platforms. All regulations which apply to mobile drilling platforms have been collected and published by Fabritius Forlag in *Flyttbare boreplattformer*, Oslo (1976). This publication is in both Norwegian and English.

91. A drilling platform is any installation, including a vessel, which is *equipped* for petroleum drilling. S. 8, emphasis added. As a vessel need not be *engaged* in drilling, this definition of "installation" is wide indeed. Norwegian jurisdiction does not conflict with that of the flag State, however, for the Decree applies to "exploration and drilling" on the Norwegian continental shelf (S. 1). A drilling vessel sailing *over* the continental shelf would remain subject to flag State jurisdiction.

92. "The Ministry" means the Ministry of Industry. S. 2(1). In fact, a substantial amount of authority has been delegated by the Ministry to the Petroleum Directorate and the Maritime Directorate. The latter Directorate is empowered to issue regulations in its own right pursuant to the Seaworthiness Act of 1903.

93. It will be recalled that an impetus for the U.K. Mineral Workings (Offshore Installations) Act was a Report into causes of that accident, which recommended, *inter alia*, that offshore installations be subject to clearly defined lines of command.

94. See particularly, Manning Regulations, S. 6, "Organisation plan,

shore Installations) Act, a major provision is that of designating a platform manager and defining his authority and responsibility.

S. 7 requires Ministerial approval before a platform can be located for drilling. The Ministry therefore has express authority to determine if a proposed location would unreasonably interfere with other users of the sea. S. 9 is a new provision requiring that

> "All items of cargo carried to or from a drilling platform shall be marked clearly with the name of the drilling platform and the well designation."[95]

This addition is clearly a response to the problem of debris dumping which is far more serious than was originally thought.[96] Identifica-

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number and composition etc. of crew for semisubmersible platforms" and the Provisional Regulations Concerning Qualification Requirements for Manning of Drilling Platforms which are intended to reduce the "human error" which is so frequently a cause of or contributor to accidents. S. 4(1) is particularly pertinent to the control of marine pollution, for it requires that employment as a drill floor man (roughneck) be preceded by a theoretical and practical course of at least 6 weeks' duration including, among other subjects, blowout prevention control. See the discussion of blowouts, above, at p. 59.

95. This provision is also contained in the Drilling Regulations, S. 8. Fishermen have also complained of drifting buoys which interfere with fishing and navigation. In response to this concern, S. 9 of the Regulations for Mobile Drilling Platforms has been amended so as to require that anchor buoys (used to moor offshore installations) be permanently marked with the name of the owner and the platform, and to be painted a highly visible colour. See also *NOU 1975: 50*, para. 1.7, p. 10.

96. Conversation with Byråsjef Christian Hambro, Ministry of Environment, 12 November 1976. There have been over 1000 reports by fishermen of damage to gear alleged to have been caused by oil-related debris. Although it is likely that some of the damage was caused by other submerged objects, the Petroleum Directorate has charted the locations where the incidents have been reported to have occurred and has found that the resultant pattern corresponds closely to installation locations and supply vessel routes. Conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976. No similar effort to chart oil related debris in the U.K. sector has yet been undertaken. Conversation with Mr.

tion of the licensee coupled with wide vicarious liability is one answer to the almost impossible problem of detecting an offender in the act of dumping.

ii) drilling platforms

Chapter III (Ss. 16-36) is concerned with safety regulations for drilling platforms. S. 16 is a basic requirement that the licensee obtain consent from the Ministry before commencing drilling operations.[97] The remaining provisions elaborate minimal requirements for equipment (for example, S. 19(1) requires "all necessary safety devices in accordance with good oilfield practice in order to prevent accidents"), provide for inspection,[98] and specify procedures which the

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G.F. Buxton, Ministry of Agriculture, Fisheries and Food, 28 March 1977. Compensation for damaged fishing gear is paid from a fund which is provided for in the Fisheries Directorate budget. As a great number of claims by Norwegian fishermen concern incidents alleged to have occurred in the U.K. sector, talks between the two Governments concerning increased cooperation have included this subject. Conversation with Mr. Aslak Aasbø, Attorney, Fisheries Directorate, 25 November 1976. U.K. fishermen benefit from a similar scheme, although it differs from the Fisheries Directorate fund in that payment is by the U.K. Offshore Operators Association and damage must have occurred in the U.K. sector. See the discussion of the Fisheries and Offshore Oil Consultative Group, above, at p. 258. Other law relevant to control of oil-related floating or sunken objects includes S. 9(1), para. 1.1 of the Regulations for Mobile Drilling Platforms (as amended) which requires anchor buoys to be permanently marked with the name of the owner and platform identification by welding, cutting or a similar manner; S. 20(1) of the Act on Salt Water Fisheries of 17 June 1955, which provides that debris disposal which hinders fishing is prohibited; and S. 24 of the Harbour Act of 1933, which states that "refuse, etc. must not be discharged in harbours and narrow and shallow fairways which are used for general traffic." S. 16 of the 1976 Decree concerned with Safe Practices in Production of Submarine Petroleum Resources is essentially identical to S. 9 of this 1975 Decree.

97. This provision is similar to Drilling Regulations, S. 36(1) and the Regulations for Mobile Drilling Platforms, S. 3(1).

98. S. 17(2) provides that the Ministry or its authorised representa-

licensee must follow (for example, S. 23(3) stipulates that towing shall be done so as to cause the "least possible" inconvenience to other users, particularly fishing and navigation). Two Sections are of particular relevance to marine pollution control. S. 27 requires that drilling platforms be equipped with the necessary technical devices for drilling, "including shut-off valves, non-return valves and safety valves" in accordance with the applicable regulations.[99] The following Section provides that blowout preventors shall conform to

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tive may inspect the platform and equipment at any time at the licensee's expense. Safety standards are set by the Petroleum Directorate and the Maritime Directorate, but some of the inspection and/or certification duties have been delegated to Det Norske Veritas, a vessel classification society. Generally speaking, Veritas is responsible for inspection and certification of major structural aspects of drilling platforms, for example the hull. Other safety requirements (for example, SOLAS requirements) are the responsibility of the Maritime Directorate, and although Veritas conducts the inspection, certification is done by the Government. Conversation with Mr. G. Lund, Attorney, Det Norske Veritas, 30 November 1976. In addition to the major task of classification of mobile drilling platforms, Veritas also performs strength calculation and inspection of fixed offshore structures, inspection and supervision of pipe laying, and inspection and supervision of other offshore oil-related equipment. "Det Norske Veritas," a brochure published by the Society (1974), p. 11. Details concerning inspection and survey requirements of mobile drilling platforms are set out in the Drilling Regulations, S. 47; and the Regulations for Mobile Drilling Platforms, S. 3. A notable difference between the British and Norwegian approaches to inspection of offshore installations is that the U.K. has delegated a great deal more authority to classification societies than has Norway, including (within limits) the authority to set standards. Standard setting remains with the Norwegian Government.

99. S. 27; Drilling Regulations, Chapter VI, "Drilling Equipment Etc.;" Mobile Drilling Platform Regulations, S. 25a. The last cited Section reflects an amendment requiring a no-return valve on hoses which transfer oil from supply vessels to drilling rigs. It was discovered that after fuel oil for rig equipment was pumped up a hose from the vessel to the rig which towered above, the practice was to disconnect the hose at the supply vessel and allow the oil still remaining in the hose to drain into the sea. The no-return valve requirement has effectively eliminated a regular source of refined oil input into the sea. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.

the requirements of regulations and shall be able to withstand any "foreseeable" pressure that may develop in the well.[100]

iii) contingencies

Chapter IV (Ss. 37-47), "Contingencies," consists almost entirely of provisions not found in the 1967 Decree.[101] The licensee is required to be prepared to deal with an emergency quickly, and to this end must prepare an emergency plan for use in the event of accidents or dangerous situations.[102] Among the three main headings which must be considered is "Situations that have involved or may involve pollution."[103] The contingency plan must be approved by the Ministry and must be compatible with a national contingency system.[104]

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100. S. 28; Drilling Regulations Ss. 43 ("Blow-out Prevention Equipment") and 44 ("Testing of Blow-out Prevention Equipment"). The Drilling Regulations also address the issue of training for drilling emergencies and the use of blowout preventers by requiring daily pit level drills and weekly blowout prevention drills. Inspectors from the Petroleum Directorate can require such drills to be conducted. S. 18(6) of the Drilling Regulations. In regard to the ambiguous term "foreseeable," it is submitted that in the context of this decree the standard of "foreseeability" is that required by good oilfield practice.

101. S. 47, requiring standby vessels, originally appeared as S. 41 in the 1967 Decree, as part of the Chapter, "Drilling." It has been rewritten so as to apply to specified instances instead of the ambiguous "when circumstances so demand."

102. S. 37a, a new provision added pursuant to S. 18 of the Royal Decree of July 9, 1976, Relating to Protection of Workers Etc. in Activities Associated with Exploration and Exploitation of Submarine Petroleum Resources; Drilling Regulations, S. 31(1). North Sea operators have been asked by letter from the SPCA of 17 September 1976 to submit a contingency plan by 1 February 1977.

103. S. 37a, para. b. Other situations are those involving injury, illness, or death (para. a), and situations which have or may put a drilling platform partly or completely out of operation (para. c). The Ministry may decide that the emergency plan shall include additional situations.

104. S. 38(1), as amended. The Ministry of Justice considers emergency

The licensee is responsible for implementing the measures described in the contingency plan.[105] In the event of an uncontrolled escape of hydrocarbons, the licensee must not only take immediate action to control and minimise the possible damage, but must also restore the environment "as nearly as possible to the same state as before the accident occurred."[106] Although the licensee is responsible

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plans concerned with injury, illness, or death, and the Ministry of Environment considers such plans relating to collection and removal of uncontrolled escapes of hydrocarbons. Ss. 37, 38(1), as amended. S. 39 requires that the contingency plan contain: 1) an organisation plan, 2) an equipment plan, 3) a detailed action plan, and 4) plans for personnel training and drills. It is also required that the contingency plan be kept current and be based on the best known technology and equipment available. Ss. 40, 41. See also, Drilling Regulations S. 31 (2)-(5), and Mobile Drilling Platform Regulations, S. 19. The latter Regulations require the drilling platform to be equipped with an Emergency Procedure Manual setting out the action to be taken in the event of a number of situations, including fire, blowout, and collision.

105. S. 42(1); Drilling Regulations, S. 31(6).

106. S. 42(2); Drilling Regulations 31(9) and 31(9.1). The last cited Section provides that "Oil spills shall primarily be collected mechanically. The use of clean-up chemicals shall not take place except in special cases and in accordance with final permit issued by the pollution control authorities." There is no comparable provision in the 1975 Decree, but the 1976 Decree Relating to Safe Practice in Production does contain a similar paragraph, S. 18(2). The State Pollution Control Authority decides whether to authorise the use of dispersants in each case according to the circumstances. Because of the limited effectiveness of mechanical oil pickup devices at present, in every case in which oil has threatened a coastline the SPCA has authorised dispersants. Conversation with Dr. Ø. Schreiner, SPCA, 17 November 1976. A letter to the North Sea Operators dated 17 September 1976, from the SPCA, required the addressees to order equipment of sufficient capacity to remove 8,000 tonnes of oil per day, in 2½ foot wave heights (50 per cent. of the time North Sea waves will be below this height), in a 1.5 knot current, and to be on the spot in 48 hours. The Norwegian Government is funding research on mechanical oil clean up devices. This is quite important because at present, for 50 per cent. of the time, the devices which are now specified will be unable to function effectively because of weather and wave conditions. There is

for clean up in the first instance, the Ministry[107] may assume command of all or part of the operation to control and remedy an accident or dangerous situation.[108] Thus, in the case of uncontrolled blowouts, the Ministry may decide that another drilling platform be diverted to drill relief wells, and that other necessary equipment also be made available.[109] The licensee on whose account a drilling

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little doubt that the present reliance on mechanical clean up devices is more the expression of a wish than the statement of a fact. Great faith is being placed in the development of more efficient and versatile mechanical oil removal devices. The duty imposed by S. 42(2) of the 1975 Decree to restore the environment "as nearly as possible to the same state as before the accident occurred" contains the seeds of litigation. Following the grounding of the tanker *Drupa* near Stavanger, a dispute arose concerning the duty of the shipowner to restore the beach to its pre-spill state. How clean did it have to be? An out of court compromise was reached. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976. The U.K. Department of Industry's Warren Spring Laboratory is also engaged in research into the problems of oil spill clean up. See above, at p. 172.

107. The SPCA is directly responsible for clean up in national waters, although the actual work will be done by local communities. The SPCA and the Petroleum Directorate (subordinate bodies of the Ministry of Environment and Ministry of Industry, respectively) may assist the operator in the case of a large spill. New legislation clarifying Governmental authority and responsibility is in preparation; the SPCA probably will be responsible for assisting the operator (if necessary) in the case of small spills; large spills will be the responsibility of several branches of Government, for example, the Petroleum Directorate, the SPCA, the Maritime Directorate, the Fisheries Directorate, etc. Conversations with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976, and Mr. G. Gjerde, Ministry of Environment, 29 November 1976.

108. S. 42(1) and (3) make it clear that the Ministry and other Governmental authorities may assume command of situations included in a contingency plan. However, S. 37, in listing "accidents and dangerous situations" prefaces that enumeration with "e.g.," thus clearly evidencing that the list is illustrative rather than exhaustive. Clearly, *any* serious situation could be the subject of Ministerial intervention.

109. S. 44(1), (2). Drilling Regulations, S. 32. These provisions

platform is employed must indemnify the owner and user of that platform "for any economic losses in connection with such drilling."[110] This provision is not further defined in either the Decree or the Drilling Regulations, and it has been pointed out that the amount of compensation would be likely to be disputed.[111] It is the writer's view that the provision as drafted is necessary but not sufficient. It is suggested that the complexities of attempting to define costs actually incurred and potential profits not realised defy codification. A more practical approach would be to refer such disputes to arbitration pursuant to the Code of 13 August 1915, No. 6 (the arbitration provision embodied in the 1972 Decree),[112] or as otherwise agreed. There are several provisions in the 1975 Decree involving relationships between offshore operators and between licensees and contractors which might well be the grounds for dispute.[113] Some dispute settlement procedure would be a useful addition.

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also apply in the event of a fire and/or explosion, with the additional provision that the Ministry may also procure fire fighting vessels at the licensee's expense. S. 45. Drilling Regulations, S. 33.

110. S. 44(3). Drilling Regulations, S. 32(3).

111. Conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976.

112. See above, at p. 441.

113. The licensee whose activity has caused the damage is liable under the Norwegian approach. However, other parties may be drawn into the situation in a number of ways. S. 43 confers upon the Ministry the authority to require that "the licensees in a district cooperate on measures to ensure the necessary preparedness to combat accidents and dangerous situations" and "participate to the necessary extent in financing co-operative contingency plans." S.43; Drilling Regulations, S. 31(8). Such cooperation is at present required by a term inserted into licences. It is planned that a uniform provision for

The licensee is responsible for ensuring that his drilling platform does not drift from position in areas where this could endanger other fixed or mobile installations.[114] This is an attempt to reduce the possibility of a collision by a mobile rig with other craft or installations, a subject of great concern among officials of both the U.K. and Norwegian Governments.[115]

The final section of this chapter requires that a standby vessel be stationed near the drilling rig. During dangerous operations it must be in the "immediate vicinity" of the platform.[116] This is a common sense requirement, effected to some extent by the U.K. through licensing arrangements[117] upon which little comment is needed.

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cooperation will be included in a new comprehensive pollution control plan to be introduced shortly. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976. The cost of such cooperation could well be a subject of dispute.

114. S. 46(1); Drilling Regulations, S. 34(1). In special circumstances, the Ministry may require measures to ensure that the platform stays on site. S. 46(2); Drilling Regulations, S. 34(2).

115. See, for example, U.K. Department of the Environment, Central Unit on Environmental Pollution, *Accidental Oil Pollution of the Sea*, Pollution Paper No. 8, H.M.S.O. (1976), at para. 6.41, p. 58; *NOU 1975: 50*, para. 1.4, p. 8.

116. S. 47(1); Drilling Regulations, S. 35(1), (2). During drilling operations, the vessel must be within one mile of the platform. During other dangerous activities, such as helicopter operations, diving, platform raising and lowering, and personnel transfer, the vessel must be able to render immediate assistance. Ss. 22(1), 47(1); Drilling Regulations, S. 35(1), (2); Regulations for Mobile Drilling Platforms, Ss. 23(1), 25(1), 26(5). The standby vessel must also be able to carry the entire platform crew, should abandonment of the installation become necessary. Ss. 22(1), 47(2); Drilling Regulations, S. 35(3); Regulations for Mobile Drilling Platforms, Ss. 23(1), 25(1). The requirement that a standby vessel be present when a jack-up platform is raised or lowered may have been prompted by the U.K.'s *Sea Gem* disaster which occurred during such an operation.

117. Conversation with Dr. J. Cowley, Department of Trade, 11 June 1976.

iv) drilling

"Drilling," the subject of Chapter V, is concerned with that subject plus the abandonment of wells, and the reports required of the licensee. The Sections concerned are therefore somewhat analogous to the U.K. Petroleum (Production) Regulations and the Model Clauses which are contained in exploratory and production licences pursuant to those Regulations.[118]

Drilling may not commence without the Ministry's written consent, and before such consent is given, the applicant must submit to the Ministry a detailed drilling programme.[119] The licensee must have already submitted and have had approved a *work* programme, which is more comprehensive, including exploration activities as well as drilling.[120]

Among detailed provisions regulating the placement and operation of drilling platforms is a requirement that special permission be obtained if the platform is to be located closer than one nautical mile from cables, pipelines or other installations and less than two nautical miles from telephone or telegraph amplifiers.[121] Should such

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118. See above, p. 297.

119. Ss. 48, 49. The latter Section sets forth a number of other documents which must also be submitted before consent will be given. The Drilling Regulations, in Ss. 12 and 13 detail the requirements for obtaining a drilling permit from the Petroleum Directorate. S. 50 of the Decree requires that, except in an emergency, prior consent is required for any major alteration in the drilling programme. Consent is also required for drilling which intentionally deviates from the vertical (subject to some exceptions), and for drilling more than one well from the same location. S. 58; Drilling Regulations, S. 23.

120. 1972 Decree, S. 17.

121. S. 51(6); Drilling Regulations, S. 15(2). The licensee is

submarine objects be damaged as a result of drilling activity, the licensee is liable regardless of fault.[122] The provision as it appeared in the 1967 Decree had established that *both* the licensee and the contractor whose activity caused the damage would be liable; the revision reflects an effort to channel liability through the licensee consistent with the provisions of S. 3(1).[123] S. 56, requiring daily telexes to the Ministry, is also an addition to the 1967 Decree, first appearing in the Drilling Regulations. Telexed information enables the Ministry (actually, the Petroleum Directorate pursuant to delegated authority) to monitor offshore activity and to respond quickly to trends and events.[124]

During drilling, all necessary steps must be taken to prevent such accidents as explosions or blowouts which might cause pollution or other damage.[125] The definition of what is "necessary" has changed: whereas the 1967 Decree specified that drilling safety equipment must be installed "as drilling operations deem them necessary in accordance

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required to examine the seabed to locate the exact position of pipelines, etc. S. 51(5); Drilling Regulations, S. 15(2).

122. S. 51(7).

123. Although the licensee will be held liable for the actions of another who is conducting operations on his behalf, it is expressly provided that his right of indemnity shall not be prejudiced by this provision. S. 51(7).

124. Conversation with Mr. Nils Vogt, Director of Legal and Economic Department, Norwegian Petroleum Directorate, 24 November 1976. Drilling Regulations S. 17 sets out in detail the information which must be contained in telex messages.

125. S. 57; Drilling Regulations, S. 19(1), (6).

with good oilfield practice,"[126] the requirement is now that

> "The drilling safety equipment shall be installed as and when drilling so necessitates and otherwise in accordance with the *regulations* at any time in force relating thereto."[127]

This new provision suggests that the law of offshore petroleum development is evolving towards a distinct framework derived from and applicable to the peculiar needs of offshore regulation.[128]

When petroleum has been found, the well shall be secured according to good oilfield practice to facilitate production, protect the well from seawater, and prevent the escape of petroleum.[129] It is noteworthy that this Section and the relevant Regulations seek not only to protect the sea, but to prevent air pollution as well.

The final Section of Chapter V is new, clarifying Ministerial

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126. 1967 Decree, S. 45(1).

127. S. 57, emphasis added.

128. See, for example, Hardy, M., "Offshore Development and Marine Pollution," 1 *Ocean Development and International Law* 239-273 (1973), at p. 251. A similar metamorphosis occurred with S. 51(1) of the 1975 Decree. In the 1967 Decree, the corresponding provision, S. 36(1), required that prior to jack-up drilling platform placement, "the seabed shall be checked and other necessary safety precautions be taken in accordance with good oilfield practice." S. 51(1) omits any reference to "good oilfield practice," but includes in its stead a requirement that "such examination shall be carried out regardless of whether the seabed has been examined in connection with other drilling in the vicinity." It is, in the writer's view, a tenable hypothesis that there is a relationship between the deletion and the addition: "good oilfield practice" may well have condoned the omission of seabed examination if the area had been inspected in connection with other drilling. The change was first published in the Drilling Regulations, S. 15(1).

129. S. 64; Drilling Regulations, S. 10(1).

control of offshore drilling by making express provision for inspection.[130]

v) abandonment of wells

Chapter VI, "Abandonment of Wells," has been shorn of the detail which characterised it in the 1967 Decree and now consists of a single Section. S. 66, though the complement of S. 64 (which requires that when petroleum has been found it shall be secured according to good oilfield practice), has omitted the industry standard from its provisions for well abandonment: it is now specified that abandonment shall occur subject to relevant regulations. S. 25 of the Drilling Regulations details the requirements for well abandonment,[131] and includes much of the detail which was part of the 1967 Decree.

vi) other provisions

The remaining provisions of this Decree are concerned with particular aspects of safety[132] which are of peripheral relevance to this thesis, and with enforcement. S. 119 provides that Ss. 45(5), (6) and 57 of the 1972 Decree shall also apply to violations of the provisions

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130. S. 65; Drilling Regulations S. 26.

131. Drilling Regulations S. 25 is divided into two major headings: "Permission, etc." and "Minimum requirements for abandonment." Of particular interest to "pollution" prevention (as that term is used herein) is S. 2.9, para. 2 which requires that before well abandonment, the licensee must inspect the seabed at the drilling location to determine that it is free of debris, and that if the inspection is done by a diving company, a certificate attesting that the seabed is clear be obtained and forwarded to the Petroleum Directorate.

132. Chapter VII, "Geological samples, logging and oil samples;" Chapter VIII, "Electrical installations etc.;" Chapter IX, "Fire prevention;" Chapter X, "Transport, storage and use of explosives;" Chapter XI, "Telecommunications;" Chapter XII, "Transportation systems;" and Chapter XIII, "Use of radioactive equipment."

of this Decree.[133] S. 45(5) of the 1972 Decree empowers inspectors temporarily to halt operations in cases of serious violations, and subsection (6) confers similar power upon the Ministry.[134] S. 57 provides that the Ministry may revoke a licence for any serious or repeated violation of the 1972 Decree. Should the Ministry take this action, the licensee is expressly given a right to present his view. If the licence is revoked, the licensee remains obligated to secure the installations and other plant and equipment and to ensure their continued use. In addition to the temporary or permanent loss of operating rights, the licensee may also be subject to criminal penalties for violation of the 1975 Decree or regulations issued pursuant thereto.[135]

c) Royal Decree July 9, 1976 Relating to Safe Practice for the Production etc. of Submarine Petroleum Resources[136]

This Decree, the result of several years consideration, is the first body of regulations expressly applicable to production installa-

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133. See above, pp. 436, 442.

134. The Ministry may order a temporary halt to operations only if repeated violations have occurred. See also, Drilling Regulations, S. 48 ("Withdrawal of Consent") and S. 49 ("Stop of Operations"); Regulations for Mobile Drilling Platforms Ss. 28 and 29 with the same titles.

135. S. 120; Drilling Regulations, S. 51; Regulations for Mobile Drilling Platforms, S. 31. As in the 1972 Decree, S. 339(2) of the Norwegian Penal Code of May 22, 1902 is applicable, unless more severe penal sanctions become applicable pursuant to statute. S. 339(2) of the Penal Code provides that "Fines may be imposed upon anybody who .... 2) violates any regulation issued by the public authorities according to law and carrying a threat of punishment."

136. Unofficial translation from Norwegian published by the Royal Norwegian Ministry of Industry and Handicraft. The Decree was issued pursuant to S. 3 of the Act No. 12 of June 21, 1963 and, according to its own S. 131, entered into force immediately.

tions.[137] The 131 sections contained in the Decree cover a wide range of subjects, some in considerable detail, grouped in 12 chapters.[138] It is proposed to examine only those provisions most relevant to control of pollution from production facilities in the paragraphs below.[139]

i) general provisions

The licensee[140] is expressly made responsible for the actions of any person who performs work for him, whether an employee or independent

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137. Initial regulations were confined to exploratory operations because that was the immediate need. In this Decree, "production installation" includes "installations with equipment that are intended for production drilling and for the production, processing and storage of petroleum," and the Decree applies to "the designing, building, installation and operation of production installations, pipeline systems and shipment installations that are located in a fixed position." Ss. 1(d), 2(1). The Ministry is empowered to apply this Decree to other exploitation installations as well, thus providing clear authority to control such structures as separate "quarters platforms" which are probably not within the definition of "production installation." Conversation with Byråsjef Christian Hambro, Ministry of Environment, 12 November 1976.

138. Introduction, General Provisions, Emergency Preparedness, Load-Bearing Structures, Production and Auxiliary Systems, Living Quarters, Telecommunications, Identification and Marking of Installations, Transportation Systems, Hoisting Gear, Production Drilling, Pipeline Systems, Shipment Installations, and Final Provisions.

139. The only existing regulations for production installations are "Instrumentation for Fixed Installations," based on the 1972 Decree because they were issued by the Petroleum Directorate before this Decree came into force. Conversation with Mr. Peter Tronslin, Mobil Exploration, Norway, 24 November 1976. Detailed production regulations, now being drafted, will soon become effective. Conversation with Mr. Nils Vogt, Norwegian Petroleum Directorate, 24 November 1976.

140. A licensee is not only a company, foundation or group which holds a petroleum exploration or production licence, but is also one of the above holding a permit to locate and operate production installations. Control is thus effected over production installations remote from the licensee, for example, the erection of an artificial island to handle supertankers and/or to serve as a petrochemical complex. S. 1(b).

contractor.[141] This provision thus denies a licensee the defence that, as an injury complained of was caused by an independent contractor, the licensee did not exercise the requisite control over the contractor's activities to be held vicariously liable. Removal of this defence increased the Government's chances of proving its case, and also makes recovery more likely because financial responsibility is a precondition of licence issuance and the licence itself is held subject to legal obedience. It is also of importance to note that the increased leverage thus exerted by the Government over the conduct of the licensee's vicarious activities is calculated to increase the care with which such activities are pursued.

S. 4, the provision dealing with vicarious liability, also provides that orders are to be directed to the licensee in the first instance, unless safety considerations require that the responsible person on the installation be the first notified. Lines of communication are thus made express, reducing the likelihood that the organisational structure will suffer from its common affliction, "communications breakdown." The licensee is charged with prompt compliance with orders so received.

S. 5 incorporates into Norwegian law the general provisions of the Continental Shelf Convention concerning interference with navigation and protection of living resources.[142] The licensee is respons-

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141. S. 4(1), (2). This provision is essentially identical to S. 3 of the 1975 Decree.

142. Continental Shelf Convention Articles 4 (protection of submarine cables), 5(6)(interference with recognised sea lanes essential to international navigation),5(7) (protection of living resources of safety zones). High Seas Convention (and possibly, customary law): Article 2 (reasonable use of the sea), Article

ible for ensuring that activities on or near production installations are conducted so as to afford "the greatest possible protection against injury."[143] Furthermore,

> "Special care must be taken to avoid damage or risk of damage to marine animal and plant life and to avoid pollution of the seabed, its substrata, the sea or the air."[144]

The quoted provision immediately above is anything but precise: neither "risk" nor "pollution" is defined in this Decree or the superior Act. It should be pointed out, however, that this sentence is incorporated verbatim from the 1967 Decree relating to safe practice in drilling, and is also incorporated in the successor to that law.[145]

Sections 6 through 10 deal with the licensee's obligation to furnish information and to provide notice in respect of production installation planning and construction.[146] Such installations must be tested as the Ministry considers necessary to ensure compliance with

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24 (duty of "every State" to enact certain types of marine pollution prevention regulations), Article 26 (protection of submarine cables).

143. S. 5(1). As the High Seas Convention (to which Norway is not a Party, but which, at least in regard to the reasonable user criterion, may be regarded as codifying customary law) only requires "reasonable regard" to other users of the sea, the Norwegian requirement of "the greatest possible protection against injury" would seem to allow ample room for Government discretion.

144. S. 5(3).

145. See, Royal Decree of 25th August, 1967 relating to Safe Practice etc. in Exploration and Drilling for Submarine Petroleum Resources, S. 4.

146. S. 6 requires the licensee to submit the information necessary to enable the Ministry to determine whether production activities will conform to the provisions of this Decree. S. 7 lists items which must be included in the plans submitted to the Ministry. S. 8 concerns publication of notice, S. 9 imposes a requirement of progress reports, and S. 10 states that certain information must be submitted to the Ministry before operations commence.

safety regulations,[147] and written consent to begin operations is also required.[148] After the commencement of operations, periodical inspections may be made and reports required to monitor compliance with standards.[149] Safety standards are established by the Norwegian Petroleum Directorate which also conducts inspections in this regard, as does Det Norske Veritas, the ship classification society to which certain authority has been delegated.[150] Removal or movement of production installations must be authorised by the Ministry.[151]

Ss. 14-20 concern the input of substances and materials into the sea or air as a result of petroleum production activities. All waste, including refuse and sewage, must be handled in accordance with standards and procedures to be developed by the Ministry of Environment.[152] The licensee is also required to "purify" effluents in accordance with requirements set by the Ministry of Environment. Although oil has been produced from the Ekofisk Field since 1971,

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147. S. 11.

148. S. 11(3).

149. Ss. 12, 13.

150. As of 1 January 1976, Det Norske Veritas had certificated 60 fixed offshore production platforms and 2 refineries and petrochemical plants. "Facts on Det Norske Veritas," a stencil printed 1 January 1976 by the Society. Veritas has been extensively involved in supervision and certification of a great number of production installations (including pipelines) for the Norwegian Government, including Ekofisk, Frigg, and Statfjord. Det Norske Veritas, *Annual Report, 1975*, pp. 14-16.

151. S. 21.

152. S. 14. The Ministry of Environment has not yet promulgated rules in respect of platform waste disposal. It is intended to set standards in this regard, but the Ministry has given priority to control of other forms of pollution thought to be needed more urgently.

discharge standards for oily water have not been set. The SPCA, charged with the control of operational discharges from installations, requires that offshore production discharges be subject to the "best available" technology. "Best available" allows for a consideration of economic factors; for example, the Ekofisk Field installations will not be required to meet the same standards which advancing technology make the "best available" to control oil in effluent from the new Statfjord Field.[153] The Norwegian approach to control of operational discharges from production installations is similar to that of the U.K.--with the notable difference that, although both Governments use subjective standards, in Norway an environmental department (the SPCA) decides what is the "best available," while in the U.K. the Department of Energy (whose primary responsibility is to promote energy production) is the judge of what is "practicable."

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153. Conversation with Dr. Ø. Schreiner, SPCA, 17 November 1976. It is evident that, as in the U.K., Norwegian regulation of operational discharges from installations is limited by science and technology. Thus, although the SPCA plans to issue permits for operational discharges (just as the Department of Energy in the U.K. will issue "exceptions" to the effluent discharge prohibitions of the Prevention of Oil Pollution Act), they have not yet done so. A great deal of research is now underway in order to provide a basis for discharge standards. The Ministry of Environment has just initiated a long-term study (five or six years) on the effects of oil in the marine environment, and licensees have been asked to submit detailed specifications regarding equipment and procedures for control of operational discharges. Oil monitoring will be done by equipment being developed both in Norway and by the U.K.'s Warren Spring Laboratory. It is intended that both the volume of the effluent stream and the concentration of oil within it be measured. Since large amounts of effluent, even greatly diluted, may cause environmental injury (especially when discharged into the same area in the long term), it is possible that a ceiling on the total amount of oil discharged within a period may be set, for example, 10 tonnes per year. Although it is not planned to set fixed standards, the SPCA is thinking in terms of 40 ppm to start. *Ibid.*

S. 16 requires that all cargo transported to or from production installations must be clearly marked with the name of the licensee and the installation designation, a provision no doubt intended to lessen a plaintiff's burden of proof when complaining of damage caused by the great amounts of oil-related debris found by the Norwegian Government to be present on the seabed near installations and supply routes.[154] Closely related to this provision for the protection of fishermen is S. 17 which prohibits hindrances left on the seabed as a result of installation construction or following its removal, and charging the licensee with conducting inspections necessary to ensure compliance.[155]

The licensee is expressly charged with effecting forthwith the necessary measures to bring a blowout or other event involving an

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154. This is essentially identical with S. 9 of the 1975 Decree.

155. S. 17 requires the licensee to ensure that "no hindrance of any kind is left on the seabed around or along such installations.. ..which may endanger marine life, or may cause inconvenience or prevent fishing, shipping or other activities." It further provides that the Ministry may require the licensee to give a similar assurance in respect of supply routes. This requirement, now applied on an *ad hoc* basis, is likely to be a provision of the forthcoming Petroleum Production Regulations. S. 17 thus applies to both seabed installations (which the Continental Shelf Convention by Article 5(5) requires be "entirely removed" when such installations are disused or abandoned) as well as oil-related debris (which may be covered to some extent by the Oslo Convention--see above, p. 128). The problem of oil-related debris has been discussed; in regard to removal of installations, there have been only a few cases of which the Ministry of Environment has become aware in which the licensee had to be reminded of his legal duty. Compliance was without incident. Conversation with Christian Hambro, Ministry of Environment, 12 November 1976. The Petroleum Directorate has the legal authority to require that *any* offshore installation be removed if it is disused or abandoned. This includes Condeep concrete production installations and pipelines. The former are designed to be moved by pumping air into the oil storage tanks to float the structure. The issue of pipeline removal has not

uncontrolled escape of petroleum under control.[156] As is the case under the 1975 Decree, the licensee is responsible for oil spill clean up, the Ministry of Environment has oversight authority and responsibility, mechanical collection is the expressly preferred method of oil removal, and the use of dispersants must be used only as decided by the Ministry of Environment.[157] Any uncontrolled escape of petroleum, all significant injuries, and every situation which may create or has created extraordinary danger of significant injury must be immediately reported to the Ministry.[158] In the event of such escape, injuries or event, production operations must be suspended to the extent necessary to achieve a reasonable degree of safety.[159]

The remainder of Chapter 2 is generally concerned with matters of health and safety. Sections 22-30 appear to be inspired by the U.K. Mineral Workings (Offshore Installations) Act, itself a result of the *Sea Gem* disaster.[160] To paraphrase its pertinent parts:[161]

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been the subject of official comment. Conversation with Mr. J. Rud and Mr. Ø. Mundheim of Statoil, 24 November, 1976.

156. S. 18(1).

157. S. 18. See footnote 106 in connection with the 1975 Decree for comments on the requirement that oil be removed primarily by mechanical means.

158. S. 19. The Ministry must be kept informed and a report analysing the incident is also required.

159. S. 20.

160. See above, p. 308.

161. Sections omitted include S. 25 (welding safety), S. 26 (required plan for diving), S. 27 (evacuation and safety equipment for manned installations), S. 28 (duty to inform Ministry of contractors and to keep a roster of all employees), S. 29 (requirement of restricted access to installations), S. 30 (additional record keeping requirement of all persons on or travelling to or from installations).

1. The licensee must prepare an organisation plan and submit it to the Ministry. There must always be a "responsible person in charge" on the installation during construction and operation. The organisation plan must state the qualifications of the responsible persons and his subordinates. Thus, although the Ministry has not set out job specifications for the person responsible, since the organisation plan must be approved, *de facto* qualifications result.[162]

2. The licensee is responsible for ensuring that all personnel on production installations are qualified to work safely. The Ministry may issue regulations spelling out such qualifications.[163]

3. The licensee must draw up emergency procedures and conduct emergency drills.[164]

Section 37 confers broad authority on the Ministry to appoint inspectors to ensure compliance with this Decree. Details of this authority include provisions authorising access to installations and provisions regarding the temporary suspension of operations in cases of serious or repeated violations.

ii) emergency preparedness

Chapter 3 deals with Emergency Preparedness. As it is quite similar to related provisions in the 1975 Decree (as amended), the reader will be referred to the discussion of the earlier instrument in a number of instances.

As in the 1975 Decree, the licensee must prepare an emergency plan[165] which, in the case of situations which have caused or threaten

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162. S. 22.

163. S. 23.

164. S. 24. Each employee must be given a copy of these guidelines and drills must be held in accordance with requirements of the Ministry (to be completed).

165. S. 39(1). See above, p. 451.

to result in oil pollution, must be submitted to the Ministry of Environment.[166] The licensee is responsible for ensuring that measures are effected in accordance with the plan, but should intervention be necessary, the appropriate Ministry may assume control in whole or part.[167] The Ministry is vested with wide discretion to plan for the mitigation of emergencies, including requirements of cooperation among regional licensees,[168] commandeering drilling equipment in the case of uncontrolled blowouts,[169] retention of special vessels and equipment to combat fire and explosions at the licensee's expense,[170] and requiring that standby vessels of certain specifications be stationed near production installations during construction or operation.[171]

S. 62, under Chapter 5, "Production and auxiliary systems," requires that production facilities have an automatic emergency shutdown system. Thus, should abnormal operating conditions occur, such

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166. Ss. 38, 39, and 40. As in the 1975 Decree (as amended), the Ministry of Justice is concerned with personal injury and death, and the Ministry retains authority in matters relating to other emergency preparedness. Ss. 38, 39.

167. S. 44. Other provisions require that the emergency plans be suitable for coordination with a national emergency system, that such plans be kept up to date, and that plans be based on the "best known technology." Ss. 41, 42, and 43.

168. S. 45. Plans are being made to require cooperation among Norwegian operators to prevent and mitigate pollution pursuant to a central legal instrument. At present, requirements inserted in licences are aimed at ensuring cooperation. Conversation with Mr. E.Ø. Poulsson, SPCA, 10 November 1976.

169. S. 46. See discussion in connection with the 1975 Decree, above, at p. 453.

170. S. 47.

171. S. 48. See above, p. 455.

as a blowout during well maintenance, shutdown would be automatic, although it is also required that the system be manually operable.[172]

iii) collision prevention

Chapter 8, "Identification and marking of installations" is pertinent to avoidance of pollution from vessel-installation collisions. S. 79 requires that installations be marked so as to be clearly visible to ships and aircraft in daylight and darkness; the following Section provides that production installations have sound and light signals, and radio position-finding aids in accordance with Ministry requirements.

iv) production drilling

Several Sections under Chapter 11, "Production drilling," are relevant to the control of marine pollution. Overall control is provided by the requirement that specified plans, drawings and specifications be submitted to the Ministry for approval.[173] The mud system is required to be adequate to ensure that the well is kept under control at all times,[174] and the blowout preventer arrangement must be able to withstand any foreseeable well pressure.[175] A number of requirements are imposed to ensure safety during production drilling,[176]

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172. S. 62.

173. S. 92. This includes details of the drilling mud system, blowout preventer system, and use of blowout preventers during certain operations.

174. S. 94. Mud cleaning and checking equipment must be installed and arrangements must be made for circulating the fluid in an emergency.

175. S. 95. BOPs must be pressure tested and function tested in accordance with the Ministry's requirements.

176. Ss. 96-110 concern information, consent and safety requirements relating to production drilling. Many of these are technical;

and when such drilling is in progress, all "necessary" steps must be taken to prevent any form of injury.[177] Abandonment of a borehole or producing well must take place in accordance with Ministerial requirements.[178]

v) submarine pipelines

Submarine pipelines are also subject to regulation under this Decree.[179] The planned pipeline must be described in detail to the

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those most relevant to prevention of pollution are summarised in the text. It is submitted that much of this detail might well be incorporated in regulations; this may become the case following the expected issuance of Regulations for Petroleum Production by the Petroleum Directorate in 1977. S. 97 is of some interest, from a political point of view. That Section states that special consent has to be obtained from the Ministry (actually, the Petroleum Directorate, pursuant to delegated authority) prior to drilling and production from the same platform. This requirement is said by some observers to have put the Petroleum Directorate in a difficult position: the Statfjord Field (in which Statoil is a major shareholder) will be greatly delayed and consequently less profitable if all drilling most precede production. The decision has been characterised as a particularly political one, more properly the province of the Storting as a particular question of petroleum development policy than the concern of a Directorate subordinate to the Ministry of Industry. The reason for caution in simultaneous drilling and production is the possibility of an unintended intersection, resulting in leakage or a blowout. This possibility is characterised as *de minimis* by an official of one major oil company, who pointed out that the same skills that can be used to guide an intersecting well to relieve a blowout can be used to avoid an unintended intersection. The geology of the North Sea Continental Shelf is such that adequate separation between wells can be calculated with more assurance than would be possible in a highly fissured area, like the Santa Barbara Channel.

177. S. 101. If injury does occur, it follows that the necessary steps to prevent such injury have not been taken. This language reflects the Norwegian law of strict liability.

178. S. 109. This provision gives the Government express control over well plugging as well as removal of seabed protrusions.

179. Chapter 12, "Pipeline Systems."

Ministry and is subject to Ministerial approval.[180] Among the investigations which the licensee may be required to conduct is that concerning the effect of the planned pipeline upon other users in the area, including fishing, navigation, and development of seabed resources.[181] Pipelines and marine risers[182] must be designed to withstand not only normal pressures, but higher stresses which may be occasioned by the addition of external forces.[183] Both pipelines and marine risers must be provided with a satisfactory corrosion protection system, and pipelines must be stabilised by the use of a concrete coating or by other means.[184] Specific provisions are also included relating to welding,[185] crossing other pipelines,[186] burial,[187] and emergency shut off systems.[188] It is expressly provided that "the

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180. Ss. 111, 112. The pipeline route is subject to approval by the Ministry, and the necessary information upon which approval will be based is specified.

181. S. 112(2)(c).

182. A marine riser is defined as "that part of a pipeline system, including its connecting arrangements, which extends from the seabed and up to an installation, booster station or shipment installation." S. 1(j).

183. Ss. 113-116.

184. Ss. 117, 118.

185. Ss. 120, 122. S. 120(2) requires that *each* separate weld be subjected to a 100 per cent. non-destructive test.

186. S. 121. Agreement with the pipeline owners and the Ministry is required in each case.

187. S. 123. "To the extent reasonable," pipelines must be buried or otherwise protected to avoid damage caused by other users. The freedom of choice suggested by "otherwise protected" is limited by the second paragraph of this Section, requiring that pipeline installation must not damage fishing gear.

188. S. 124. The emergency shutoff system must function automatic-

pipeline shall be installed so as not to damage fishing gear."[189]

vi) other provisions

Chapter 13, "Shipment installations," contains four Sections. Included are provisions which require information relevant to planned installations,[190] general requirements that the installation design minimise the possibility of accidents,[191] and procedural requirements, including the provision that "loading shall be carried out so that there is the least possible danger of petroleum escaping."[192]

Violations of this Decree are punishable by both criminal sanctions and loss of licence. In the case of serious violations (which include false or withheld application information and interference with a public inspector as well as non-compliance with the technical requirements of the Decree), the Ministry may revoke the licence or permit to locate and operate.[193] Even in the case of less serious

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ally as well as manually.

189. S. 123(2).

190. S. 125.

191. S. 126. Protection should be such that "as far as possible any collision between the shipment installation and the ship will not cause leakages."

192. S. 128(5). Loading shall only occur during weather which will allow safe operations, continuous communication between the ship and the loading operator is required, and there must be a system which allows loading to be stopped rapidly and the vessel to disconnect at short notice. During the tanker loading operations at Ekofisk, loading was occasionally interrupted by bad weather. Taylor, A., "Ekofisk Development: Movement of Oil from Platform to Shore," in Cole, H. (ed.) *Petroleum and the Continental Shelf of Northwest Europe*, Vol. 2. Applied Science Publishers Ltd. on behalf of the Institute of Petroleum, Great Britain (1975), pp. 31-35, at p. 33.

193. S. 129(1)(3).

violations, the licence may be revoked if the complaint is not remedied within a reasonable time limit set by the Ministry.[194] In any case involving licence revocation the licensee may appeal, but should he be unsuccessful, he must secure the disused installation in accordance with relevant regulations.[195] Both wilful and negligent violations of Decree provisions are punishable by fine pursuant to the Norwegian Penal Code.[196]

3. Conclusion

The Norwegian law which controls pollution from offshore installations is remarkably similar to that of the U.K. Each State has understandably been concerned initially with regulations to control pollution from drilling accidents. Thus, even though the Ekofisk Field has been producing petroleum since 1971, production regulations did not appear until 1976. Subordinate regulations pertaining to drilling have now been published, thus relieving the 1975 Decree of some of the detail which characterised its 1967 predecessor, but analogous regulations have yet to be published in respect of production operations.

There are no published standards for the discharge of effluents from production platforms. The Norwegian position in this respect is again similar to that of the British, for both Governments are constrained by the limits of oily water separator technology. The

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194. S. 129(1).

195. S. 129(4)(5).

196. S. 130. Section 339(2) of the Norwegian Penal Code, to which S. 130 refers, provides merely that fines may be imposed on a person who "violates any regulation issued by the public authorities according to law and carrying a threat of punishment."

Norwegian approach which requires the operator to use the "best available" technology (considering economic factors) to limit oil in installation operational discharges is similar to the U.K. "best practicable" standard. The two approaches are further compared below.[197]

C. Pollution from Tankers and Support Vessels

1. Regulations Concerning Prohibition Against Discharges of Oil into the Sea from Ships Etc.[198]

These Regulations incorporate the 1954 IMCO Convention (as amended in 1962) into Norwegian law. The national legislation faithfully reflects the international instrument with few exceptions. As the IMCO

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197. See below, p. 530.

198. Issued by the Maritime Directorate, 27 April 1967; in force 18 May 1967, pursuant to its S. 14. Norwegian reference: Meddelelser fra Sjøfartsdirektoratet, Nr. 221, 10 Mai 1967, Nr. 4 for 1967. English reference: Grøndahl and Søns Forlag, in *Excerpts from Norwegian Shipcontrol Legislation*, Oslo (1974), pp. 153-162. These Regulations are issued pursuant to the authority of the Act Concerning Protective Measures Against Damage from Oil Pollution of 6 March 1970, as amended (hereafter, the Oil Defence Act). The Oil Defence Act (which replaced Act No. 17 of 9 December 1955) provides a general framework for oil pollution prevention and control. It authorises the issuance of regulations, the establishment of a Council on Oil Pollution, and a Fund to cover costs incurred in oil pollution prevention, mitigation, and clean up. Much of the Act is now "sleeping," as one Norwegian official described it, pending new legislation to be presented to the Storting in 1977. The Council, found to be an inefficient executive, was effectively stripped of its power by an amendment which provided that Council duties could be delegated (*Ot. Prp. No. 56*, June 1976; in Norwegian), thus paving the way for the transfer of such duties to the SPCA. The Fund, though established, did not work, primarily because of objections to the taxation of imported oil as a means to finance it. The SPCA budget is now the source of Fund replenishment. (It should be noted that this Fund is *not* used to compensate fishermen for damage caused to their equipment by oil related debris; that money comes from the budget of the Fisheries Directorate.) Conversation with Mr. Gunnar Gjerde, Ministry of Environment, 29 November 1976. See also Bugge, H., "Cooperation across the North Sea on Oil Pollution Defence," an interview in *Northern Offshore*, No. 2 (1975), pp. 6-10.

Convention has been discussed above,[199] it is proposed merely to outline those parts of the Regulations which are unexceptional, reserving comment for significant aberrations and additional information. In the latter category is a preliminary remark on the status of Norwegian acceptance of the various Amendments to the 1954 IMCO Convention, as well as the 1973 Convention intended to replace the earlier instrument: as indicated in Table VIII-1 on page 421, Norway has accepted relevant Amendments to the 1954 Convention, and plans to become a Party to the 1973 Convention. Regulations to implement the 1969 and 1971 (Tanks) Amendments to the 1954 IMCO Convention were published 2 January 1977, and will come into force 1 September 1977.[200] The Maritime Directorate is currently preparing a report concerning the disposal of sewage and garbage from vessels; this information will be used in drafting legislation to implement the 1973 IMCO Convention. The Directorate is also engaged in drafting a new Chapter in the Seaworthiness Act of 1903 which will consolidate all vessel discharges (including ocean dumping) in one instrument.[201]

S. 3 may be termed the basic provision of the Regulations, as it sets out the prohibition against discharge of oil into the sea. In addition to implementing the Convention's prohibitions into domestic

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199. See above, p. 151.

200. The 9 months between publication and effective date is to give shipowners a chance to adjust. Conversation with Mr. G. Stebberud, Maritime Directorate, 19 November 1976. The Maritime Directorate has already required that new Norwegian vessels be constructed in accordance with the requirements of the 1971 IMCO "Tanks" Amendment, which relates to the size and placement of cargo tanks in tankers. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.

201. Conversation with Mr. Odland, 19 November 1976.

law, provision is made for forbidding discharges of oil or oily mixtures into Norwegian territorial waters by ships of any nationality.[202] This apparently blanket prohibition is in fact more like a wide-meshed net, for it is restricted by the scope of the Convention which the Regulations are meant to implement. "Oil" means only certain kinds of liquid hydrocarbons,[203] and an effluent with fewer than 100 ppm of oil to other liquid is not an "oily mixture,"[204] and certain vessels are not subject to regulation:[205] in consequence, most supply vessels[206] and many refined oils (such as paraffin and petrol) used in offshore activity are not subject to regulation in Norwegian waters.[207] These Regulations are, therefore, unnecessarily narrow, for Norway has sovereignty over her territorial sea, limited only by the right of innocent passage,[208] and it is clear that under international law Nor-

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202. S. 3(1)(a).

203. "Oil" means crude, fuel, heavy diesel and lubricating oils, S. 1(1).

204. "Oily mixture" means one ten-thousandth part or more of oil (equivalent to 100 ppm as formulated in the Convention).

205. Neither the Regulations nor the Convention apply to tankers of less than 150 gross registered tons (GRT), to other ships of less than 500 GRT, or to ships operated by the Navy.

206. Most Norwegian supply vessels are less than 500 GRT to avoid Regulations stipulating crew requirements. *Noroil* (No. 1) (1974), pp. 23-26, at p. 25.

207. S. 24 of the Harbour Act of 1933 authorises harbour authorities to "lay down prohibitions against the discharging of oil into the harbour," a provision which clearly cannot be stretched to regulate discharges of hydrocarbons into territorial waters (which, to a substantial degree, begin their 4-mile breadth from straight baselines). Even if the territorial sea could be included within the geographical scope of harbour authorities, a patchwork of standards and enforcement is the likely result unless there is some formal coordination.

208. See above, p. 197.

way could have prohibited any discharge of any oil--as has been done by the U.K.[209]

The Regulations incorporate the provisions concerning oil record books ("oil logs" in the Regulations) contained in the Convention, and include the spirit as well as the letter of the law: after setting out the requirements for keeping an oil log, it is expressly provided that the master of a Norwegian ship is obliged to produce the log upon the request of the foreign authority in a foreign port.[210] It is true that the Convention requires such behaviour, but publication of an express duty so to act can only encourage compliance by Norwegian ships. This good faith provision is complemented by the penal provision of the Regulations which (as required by the Convention) does not distinguish between Norwegian and foreign offenders.[211]

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209. S. 2 of the U.K. Prevention of Oil Pollution Act prohibits the discharge of any oil by any ship into U.K. waters. See above, p. 344. The Convention exceptions incorporated into the Regulations may be inconsistent with the Norwegian rule of strict liability (see below, p. 494). Exceptions include discharges made for safety or life-saving, unavoidable leakage, fuel or lubricating oil residues, lubricating oil from bilges, and discharges from non-tankers *en route* to a port with inadequate oil reception facilities. S. 4(1). The first exception is slightly more restrictive than its Convention counterpart, as it does not provide that a discharge made for the purpose of securing the safety of cargo is an exception to the discharge prohibition provisions of the Regulations. S. 4(1), Convention Article IV(a). The last exception is noteworthy because, in the opinion of an official of the Ministry of Fisheries, oil reception facilities are presently inadequate, both for normal operations and in the case of dry docking. Mr. Stebberud pointed out that Norway has not had to be overly concerned about ballast water from tankers because they have been an oil importer. Refineries and export ports will be required to have adequate reception facilities to handle Norway's new oil export traffic. Conversation with Mr. G. Stebberud, Maritime Directorate, 19 November 1976.

210. S. 5(6)(b).

211. S. 13. This provision is drafted in the manner of the penal

Ss. 6-10 are concerned with "devices for the prevention of oil pollution," which are mandatory for ships built after these Regulations came into force, and for certain existing tankers as well. S. 9(1)(a) is the heart of these provisions, requiring all ships regulated thereby to have either separation equipment or storage facilities to deal with engine-room oily effluent. Oily water separators must be approved by the Maritime Directorate and must be demonstrated to have the capability to reduce the oil in water content to 50 ppm in a test performed in the presence of a surveyor appointed by the Maritime Directorate.[212] S. 10 requires that tankers must be equipped with "cleaning facilities" for treating oily ballast or tank-washing effluent, if such equipment is necessary in order to meet the discharge criteria set out in the Regulations.

The Regulations appear to authorise the Maritime Directorate to require that certain foreign vessels in Norwegian waters comply with the oil pollution prevention equipment requirements of Ss. 9 and 10, for unlike the provisions extending Norwegian law to vessels on the high seas,[213] the Regulations are not limited to Norwegian vessels.

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clauses in the Decrees concerned with offshore oil development, providing that S. 339(2) of the General Civil Penal Code of 22 May 1902 will apply unless a more severe penalty is applicable under any other statutory provision. Unlike the U.K. Prevention of Oil Pollution Act, no separate penal provisions are made for non-compliance with oil record book requirements. See above, p. 355.

212. S. 8(c)(1). This is one-half the permissible oil in effluent under the Convention. Oily water separation equipment is checked at the time of installation and during the required surveys every four years thereafter. There are no arrangements for inspection at sea. Conversation with Mr. G. Stebberud, Maritime Directorate, 19 November 1976.

213. S. 3(1)(b), (c).

Furthermore, the discharge of oil into Norwegian territorial waters by ships of *any* nationality is expressly prohibited.[214] The provision which would allow the imposition of equipment requirements on foreign vessels merely passing through the territorial sea is on the frontier of actions permitted under international law.[215] In practice, however, the Norwegian Government has exercised restraint in interference with foreign flag vessels, caution which may have been as much influenced by fear of retaliation against her extensive merchant fleet (soon to be exporting oil) as by considerations of international law.[216]

2. Temporary Regulations on Intervention on the High Seas in Case of Oil Pollution or Danger of Oil Pollution as a Consequence of a Marine Casualty[217]

These Regulations incorporate the Intervention Convention into

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214. S. 3(1)(a), emphasis added. S. 3(1)(b) and (c) implement the Convention's provisions and, like the international instrument, are concerned with prohibited zones that extend 50 or 100 miles from land. Although these zones include the territorial sea, it is clear that the primary purpose of the Convention was to limit discharges by agreement beyond coastal State jurisdiction. It will be recalled that the 1962 Amendments made the entire North Sea a prohibited zone. Convention, Annex A, (2)(b)(iii). See above, pp. 153, 477.

215. It will be recalled that the U.K. Prevention of Oil Pollution Act 1971 would permit application of U.K. vessel equipment standards to foreign vessels, but only when they are in a U.K. harbour or are in U.K. waters while approaching or leaving a U.K. harbour. See above, p. 349.

216. It is interesting to note that both the U.K. and Norway, as coastal States with large merchant fleets, have exercised great discretion in attempting to balance coastal protection with freedom of navigation.

217. These Regulations were promulgated under the authority of the Act on Measures Pursuant to the International Convention of November 29, 1969 on Intervention on the Free Seas in Case of Oil Pollution Accidents, 16 June 1972, No. 46. Pursuant to Chapter II, S. 7 of the Regulations, they came into force 6 May

Norwegian law.[218] It is, with one exception, an unremarkable set of rules, conforming closely to the treaty.

These Regulations depart from the Convention in that they apply when there is "imminent danger of a marine casualty"--not just *after* such an incident, as in the treaty.[219] "Preventive interference" in the North Sea may be inconsistent with customary law (and may pose practical problems).[220] As Professor Brown has observed, the right of "self defence" applies only in certain cases involving unlawful acts or omissions.[221] There may, however, be room within the doctrine

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1975. The English translation of the Act and the Regulations was made possible by a grant from the Ford Foundation.

218. The Intervention Convention is discussed above, at p. 188.

219. Chapter I, S. 2, para. 1.2. An analogous provision omits the requirement of imminence, authorising action if there is "danger of a marine casualty taking place," although requiring that the threat of damage must be grave or imminent. Chapter II, S. 1.

220. It will be recalled that the Convention provides only that Parties "may take such measures on the high seas as may be necessary" to prevent pollution damage, without specifying what such measures might be. The Regulations, like the U.K. Prevention of Oil Pollution Act, authorise the destruction of the ship and its cargo if required. Chapter II, S. 2; U.K. Prevention of Oil Pollution Act, S. 12(4) (above, at p. 367); Intervention Convention, Article I(1). Professor Dinstein has posed the hypothetical situation of an Israeli tanker stranded in the Red Sea, bombed by an Egyptian aircraft for the reason that, in the Egyptian view, it constituted an imminent pollution danger to Egypt, to illustrate the danger of allowing the coastal State to justify its own drastic actions. Dinstein, Y., "Oil Pollution by Ships and Freedom of the High Seas," 3 *Journal of Maritime Law* 363 (1972), at pp. 371 and 373. Professor Dinstein's warning applies *a fortiori* to the case of coastal State interference with foreign flag vessels on the high seas when a shipping casualty has not yet occurred.

221. Brown, E.D., *op. cit.* in footnote 5, at p. 142.

of necessity to accommodate a change in the normal rule of international law that the flag State has exclusive jurisdiction over its ships while they are on the high seas. It will be recalled that one authority has observed that "it is the great disparity in the importance of the interests actually in conflict that alone justifies a reversal of the legal protection normally accorded to these interests."[222] Assessment of conflicting interests so depends upon the circumstances, that "a comparison of the conflicting interests appears to be indispensable" in every case.[223] There may arise a combination of circumstances such that interference with a foreign vessel by the coastal State in order to avert almost certain injury to its interests is consistent with the *opinio juris generalis*, if not international customary law itself.[224] Ordering the transfer of oil from a stricken tanker to other vessels is a suggested example. Not only might the circumstances be such that a transfer of cargo thus ordered would be reasonable, but the doctrine of proportionality, a check on excessive

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222. Cheng, B., *General Principles of Law as Applied by International Courts and Tribunals*, Stevens and Sons, London (1953), at p. 745, cited by Brown, E.D., *op. cit.* in footnote 5, at p. 145, footnote 35.

223. *Ibid.*

224. Professor Cheng has suggested that the only element necessary to the existence of international customary law is *opinio juris generalis*, State practice merely being evidence that the necessary requirement exists. Cheng, B., "United Nations Resolutions on Outer Space: 'Instant' International Customary Law?" 5 *Indian Journal of International Law* 23-48 (1965). Professor Simma has pointed out that this is a distinctly minority view and is inconsistent with the opinion of the I.C.J. in the *North Sea Continental Shelf Cases*, in which the Court stated that the formation of international customary law required constant and uniform practice. Lecture at The Hague Academy of International Law, 29 July 1976. See the *North Sea Continental Shelf Cases, I.C.J. Reports* (1969), at para. 74.

remedies, is likely to be satisfied as well.[225]

The Regulations include two other provisions which limit Government discretion--and which are not present in the U.K. Prevention of Oil Pollution Act.[226] The "related interests" enumerated by the Convention as illustrative of the intended scope of protection are incorporated, including the threat of "damage" to activities in coastal areas. As discussed above,[227] this raises a question as to whether interference with offshore oil development might be included within the ambit of the Convention. It was then concluded that activities on the continental shelf, even scores of miles from the coastline, might be considered "coastal" and so fall within the Convention. Protection, however, was meant to be from injury caused by oil pollution: thus, a tanker drifting toward an installation might be interfered with on the basis that it would cause oil pollution damage to the installation, or to other activities or areas after drifting, but the measures taken would have to be proportional to the amount of *oil pollution damage* which could reasonably be expected. Collision damage, surely the primary concern, could not be considered as a factor justifying interference pursuant to the Convention--although it might well be relevant to international customary law.

The second inclusion found in the Norwegian law but not in the British Act is the duty to consult with other States which may be affected by the marine casualty prior to taking action. Together with

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225. S. 6; Convention, Article V.

226. See above, pp. 366-367.

227. See above, pp. 191 *et seq*.

the *ex post facto* requirement of notification of measures taken, these common sense provisions may also reflect emerging customary law.

The Regulations empower the Oil Protection Council to act according to its provisions.[228] However, as mentioned above, the Council now plays a much-reduced role in the Norwegian scheme of environmental protection, and the SPCA has assumed many of its duties.[229] Present organisation would therefore require the SPCA to decide what interference with a foreign vessel was necessary and justifiable, but this would be done in consultation with the Maritime Directorate.[230]

3. Act of 17 December 1976 Relating to the Economic Zone of Norway[231]

Finally, attention is drawn to an Act Relating to the Economic Zone of Norway. This Act is primarily concerned with fisheries, but S. 7 anticipates emerging law of the sea by providing that, "(s)ubject to the rules of international law," regulations may be made within the 200-mile zone concerning:

> "a. the protection of the environment,
>
> b. scientific research,
>
> c. permanent or temporary artificial islands, installations, including artificial port facilities, and other structures,
>
> d. cables and pipelines,
>
> e. the exploration and exploitation of the economic zone for other economic purposes,

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228. Chapter II, Ss. 1, 4, 5.

229. See above, p. 475, at footnote 198.

230. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.

231. Reprint from "Fiskets Gang"--No 1-77 (in Norwegian and English).

including the production of energy."

Subsection (a) is of particular relevance to this investigation. Regulations pursuant to subsection (a) could give the Norwegian Government authority to set and enforce standards for foreign flag vessels in its sector of the North Sea--without regard to any nexus with development of the natural resources of the continental shelf. As a major maritime State, Norway is unlikely to enact Regulations pursuant to this Act without the consent (express or tacit) of at least those States "most interested," that is, the U.K. plus other North Sea States. Nevertheless, it is submitted that although Norway would certainly prefer to legislate with, rather than in advance of, international law, if a multilateral solution to the problem of vessel pollution beyond the territorial sea acceptable to Norway (whether widespread ratification of the 1973 IMCO Convention or a more comprehensive framework from UNCLOS III), is not forthcoming within a decade, the authority latent in this Act will be exercised unilaterally.

D. Pollution from Dumping at Sea: Regulations on dumping of substances which may have harmful effects on marine life and human health of 4 February 1975[232]

These Regulations were intended to incorporate the Oslo Dumping Convention into Norwegian law and have also been used to implement the London Dumping Convention.[233] Although the two Conventions

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232. Issued pursuant to S. 18 of the Water Pollution Act of 26 June 1970 and the Royal Decree of 14 July 1972, in force 14 July 1972. Stenciled English translations of the Regulations and the Act from the Norwegian Ministry of Environment.

233. Telephone conversation with Byråsjef Christian Hambro, Ministry of Environment, 9 November 1976. Norway was an advocate of the Oslo Convention. See the discussion above, at p. 205.

differ in geographical scope, as well as in other minor respects, such differences pose no obstacle in Norwegian law to observance of the provisions of both Conventions.[234]

No substances or materials may be dumped from ships or aircraft into the high seas or the territorial seas of Norway or of other States Parties to the Oslo Convention without a permit from the State Pollution Control Authority (SPCA).[235]

S. 2 of the Regulations incorporates the Convention's "black list" by prohibiting the issuance of permits for the dumping of persistent organic compounds, etc. and also includes the permitted exceptions.[236]

Annex II of the Oslo Convention is incorporated in the Regulations as well; it is therefore required by Norwegian law that a specific permit be obtained from the SPCA before such substances as certain heavy metals are dumped.[237] The Regulations are likewise

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234. *Ibid.* One apparently minor difference between the Oslo and London Dumping Conventions is that the former includes "fixed or floating platforms" (Article 19(2)), whereas the London Convention expressly excludes "the disposal of wastes or other matter directly arising from, or related to the exploration, exploitation and associated off-shore processing of sea-bed mineral resources" (Article III(1)(c)). As discussed above (p. 128), the Oslo Commission has agreed upon a Draft Resolution which would classify disposal of pipes, metal shavings and other material which may present a serious obstacle to fishing or navigation as acts of deliberate disposal within Article 19 of the Convention. The significance of this difference to municipal law is that a State Party to the London Convention only would lack the international consent to regulate such activity by foreign vessels loading for dumping in its ports and dumping within its territorial sea which the Draft Resolution unequivocally provides.

235. S. 1. Oslo Convention definitions of "dumping" and "vessel" apply.

236. It will be recalled that the U.K. Dumping at Sea Act does not include the Convention Annexes. See above, p. 386.

237. S. 3.

faithful to the Convention in providing that such substances "should" be deposited in deep water, and that when issuing permits for dumping large quantities of acids or alkalis, consideration should be given to the possibility that other substances listed in Annex II may also be present.[238]

When considering whether to issue a permit, the SPCA must consider the factors listed in Annex II of the Oslo Convention, such as characteristics of the waste and of the dumping site.[239] In practice, the SPCA gets few requests for permits to dump, and those it does receive it usually denies.[240] In the period 1975-76 only four permits were issued, all of which involved the dumping of relatively non-toxic materials in internal waters.[241]

The scope of these Regulations is further defined in Ss. 5 and 6. The former section sets out the persons to whom the Regulations are intended to apply in a single sentence:

> "It is forbidden for Norwegian citizens and enterprises to make arrangements for discharges in contravention of the provisions mentioned above."[242]

This provision partially fulfills the obligation to exercise juris-

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238. S. 3. The Oslo Convention definition of "deep water" applies.

239. S. 4.

240. Conversation with Dr. Ø. Schreiner, SPCA, 17 November 1976. In consequence, environmentally acceptable disposal sites on land must be found.

241. *Ibid.* The dumping actually occurred in deep Norwegian fjords. As in the U.K., permits to dump which have been granted are open to public inspection.

242. A Norwegian "enterprise" is a company or "daughter company" organised in Norway. "Arrangements for discharges" would probably include loading for dumping. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976.

diction imposed by the Oslo Convention, but it omits any language which would make illegal the act of dumping by foreign vessels and aircraft in the Norwegian territorial sea. It is likely that this omission resulted from the view that such a provision was unnecessary (Norway already having jurisdiction over foreign vessels in her territorial sea subject to the right of innocent passage), coupled with a desire to be as subtle as possible in asserting jurisdiction over foreign vessels--assertions which might invite retaliation against the Norwegian merchant fleet.[243]

S. 6 includes the Convention (and customary law) exception to the afore-mentioned prohibitions on ocean dumping in cases of danger to human life or to the safety of a ship or aircraft, qualified by an obligation to report such emergency dumping immediately to the SPCA.[244] No further statutory defences are provided, but in the opinion of the head of the SPCA legal department, defences such as those set out in the U.K. Dumping at Sea Act could certainly be employed by a defendant.[245]

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243. *Ibid.* Should proposed Article 20 of the Committee III RSNT became law binding Norway, that State would have the right to control all dumping in her sector of the North Sea.

244. Dumping which is covered by the Oil Defence Act is also outside the Regulations. S. 6(3). This is significant because some of the discharges exempt from the Act may still fall under the Regulations, and thus be subject to control. For example, the discharge of used cleaning solvent by a Norwegian supply vessel might well not come within the Act because of the vessel's tonnage and the hydrocarbon description. Yet, if it were shown that the solvent were indeed "dumped" and that such discharge were not "incidental" to the vessel's operations such discharge would be prohibited under the Regulations.

245. The Dumping at Sea Act provides that it is a defence for one accused of violating the Act to prove: 1) That he was acting pursuant to his employer's instructions, or that he acted in

Violation of these Regulations is punishable by unlimited fine or by a prison term not to exceed 4 months.[246] The provision for imprisonment, not found in the Norwegian law pertaining to regulation of pollution from seabed operations or from vessels, is not likely to be used. In the opinion of the SPCA, the type of offence likely to be of sufficient magnitude to be detected is also probably going to be committed by a Norwegian-based company. It is thought that a fine could be more readily tailored to fit the offence than imprisonment which would be likely to involve difficult problems of proof in relation to personal culpability.[247]

Enforcement of the Regulations is done in two ways: certain industries known to produce large quantities of waste material are required by the Ministry of Environment to account for the method by which such waste is disposed.[248] Vessels suspected of ocean dumping activities may also be inspected in Norwegian ports, although the SPCA has no staff of inspectors and is therefore dependent upon whatever

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good faith on false or misleading information; or 2) that, in a case in which he is charged with dumping from a British ship outside British waters, such dumping was authorised by another Convention State. (See above, p. 390.) Mr. Poulsson pointed out that a defendant wishing to employ the first defence may be faced with difficulties in proving to the court's satisfaction that he acted in good faith. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976.

246. S. 8. Punishment is pursuant to S. 17 of the Water Pollution Act.

247. This also accounts for the omission of a provision for piercing the corporate veil, a frequent clause in U.K. pollution control law. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976.

248. Conversation with Byrådsjef Christian Hambro, Ministry of Environment, 12 November 1976.

reports it might receive from various sources.[249] Despite the obvious practical problems of enforcing the Regulations, it is not thought (conceding imperfect information) that any significant illegal ocean dumping is occurring by persons subject to the law.[250]

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249. Conversation with Mr. E.Ø. Poulsson, Counsellor, SPCA, 10 November 1976. The navy, port authorities, and fishing vessels all constitute sources of information. Foreign vessels in the Norwegian territorial sea would not be likely to be inspected unless there was strong evidence of illegal dumping.

250. Conversation with Dr. Ø. Schreiner, SPCA, 17 November 1976.

CHAPTER NINE

THE NORWEGIAN LAW OF LIABILITY FOR MARINE POLLUTION

A. Introduction

The Norwegian law of civil liability for injury caused by pollution from offshore petroleum development is a mixture of legislation intended to implement international conventions and the domestic rules of civil liability which apply in the absence of such legislation and conventions.[1] (See Table IX-1 on the following page.) As in the U.K., recovery for oil pollution damage caused by ships is, to a large extent, governed by the terms of municipal law implementing the 1969 Civil Liability Convention.[2] In those cases in which pollution damage is caused by other agents (for example, refined spirits) or from other sources (for example, a pipeline rupture) the plaintiff must prove his case under the ordinary rules of Norwegian law.[3] In some cases the defendant is held to a standard of strict liability, so the plaintiff's burden of proof is lessened. Under the present system, however, a victim may still not recover damages if he cannot show to a court's satisfaction that he has incurred the loss of a property right protected by law. Thus, even if a Norwegian fisherman could prove that drilling in the areas north of 62° N. through which cod migrate had an adverse economic effect upon him by reducing available

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1. Fleischer, C.A., "Liability for Oil Pollution Damage Resulting from Offshore Operations," *Scandinavian Studies in Law* 107-143 (in press).

2. See above, p. 240. The Fund Convention will also be implemented by Norwegian law when it comes into force.

3. The basic provision is the Act on Torts of 13 June 1969, although application of this Act may be determined by other law (for example, the 1972 Decree), licence provisions, and court decisions.

TABLE IX-1

NORWEGIAN ACCEPTANCE OF CIVIL LIABILITY CONVENTIONS

Convention	Signed	Ratified/ Acceded	Relevant Norwegian Law
Civil 1969		21-3-75	Act of 20 July 1893 (as amended) Chapter 12 Provisional Regulations Concerning Insurance and Other Financial Security Against Liability for Oil Pollution Damage and Regarding Certificate
Fund 1971	21-12-72	21-3-75	Act of 20 July 1893 (as amended) Chapter 12
Nordic 1974	19-2-74	7-3-75	Act of 9 April 1976
Offshore 1976	17-12-76		Draft Regulations

fish stocks, a claim for compensation would likely be denied because the fish not reduced to possession are a common resource rather than his property.[4] The aggrieved fisherman, the disappointed holiday maker at the seashore, the concerned environmentalist may seek injunctive relief,[5] but this may not always be a satisfactory remedy. For example, if the choice were clearly between the use of ocean space for a petroleum production complex or as a completely open area in which trawlermen might ply their trade, an injunction prohibiting one activity would leave the other party uncompensated in money or opportunity. A legal system is deficient as an instrument of public policy if it omits provision for satisfactory reconciliation of conflicting interests subject to that policy.

Considerations such as this have caused the Norwegian Government to commission studies on the question of civil liability for pollution damage. A committee formed to investigate the question of civil liability for all forms of pollution damage was scheduled to submit a comprehensive draft law on civil liability for pollution damage to the Storting in early 1977.[6] The draft law, incomplete at the time of writing, is to include provisions concerned with compensation for

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4. Conversation with Mr. Bjørn Engstrøn, Justisdepartementet, 17 November 1976. Mr. Engstrøn is Secretary of a Committee charged with drafting a comprehensive law concerning compensation for injury from all forms of pollution.

5. *Ibid.*

6. *Ibid.* The Committee members include representatives from agriculture, fishing, trade unions, the Ministries of Justice and Environment, and other concerned interests. Conversation with Mr. Olav Skarpness, Justisdepartementet, 26 November 1976. The Committee was first concerned with drafting regulations setting out the legal duty to prevent and mitigate pollution; it then considered the problem of compensation, including the issues of

losses which may not be readily measurable in economic terms (for example, destruction of sea birds), or which may not be property rights (for example, reduction of fish stocks). The Committee is considering a number of ways to implement these provisions, including the establishment of a fund (similar to that already in existence to compensate fishermen for debris damage), and a provision that the Government may sue on behalf of the thing injured (for example, sea birds).[7]

B. Civil Liability for Pollution Damage from Seabed Operations

The 1972 Decree expressly provides that the Norwegian law of torts applies in cases of "damage or inconvenience" caused by seabed operations.[8] Although Norwegian law is based on fault liability unless it can be shown that the activity was "hazardous,"[9] in the opinion of a leading authority on the subject, Norwegian offshore oil development is governed by a standard of strict liability.[10] There is no ceiling

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required standard of care and proof of injury.

7. The local Government Council charged with the responsibility for pollution control would be the plaintiff in a suit on behalf of the thing injured. Conversation with Mr. Bjørn Engstrøn, Justisdepartementet, 17 November 1976. *Cf.* the proposal by U.S. Supreme Court Justice W.O. Douglas that the injured "things" be granted standing to sue in their own right.

8. 1972 Decree, S. 51. The Decree of 9 April 1965 which was replaced by the 1972 Decree contained an identical S. 51.

9. Norwegian Ministry of Finance, *Parliamentary Report No. 25* (1973-74), "Petroleum Industry in Norwegian Society," at p. 38.

10. Fleischer, C.A., *loc. cit.* in footnote 1. Mr. Engstrøn observed that an "unwritten law" of strict liability generally applies in cases concerned with civil liability for pollution damage. Conversation with Mr. Bjørn Engstrøn, Justisdepartementet, 17 November 1976. See also, Brask, G., "Oil Catastrophes - Liability - Insurance," *Nordisk Forsikrings Tidsskrift* (1974), pp. 125-136,

on liability[11] and the licensee is vicariously liable jointly and severally with the tort feasor and the latter's employer.[12] As noted above, it is thought by some scholars that S. 51 by its terms expands the Norwegian law of vicarious liability which does not normally extend beyond employees or contractors over whose activities the defendant is found to have the required degree of control.[13] The strict liability standard for the licensee is set out expressly in the petroleum production licences granted on 15 November 1974, an inclusion intended as an interim measure until the enactment of appropriate legislation.[14] Such legislation, based on the Report of the Fleischer

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at p. 128. Mr. Brask, a Norwegian insurance company executive, discusses liability in respect of three specific examples: 1) a supply vessel negligently causes total loss of an oil rig and herself, 2) a rig negligently causes a blowout, damaging third parties, and incurring well-control and down-time costs, and 3) a supertanker hits a storage tank, causing oil pollution from both ship and tank, damage to the tank, and loss of the ship.

11. The owner of a drilling rig classified as a vessel might enjoy limited liability under existing legislation. Fleischer, C.A., *op. cit.* in footnote 1, at p. 109. Professor Fleischer observes that "it does not seem probable, however, that a drilling rig in operation--still less a platform--could be regarded as a ship. In any case, the limitation following from such a viewpoint would only apply to the owner or operator of the rig, not to the licensee or owner of the oilfield, and here we are mainly concerned with the licensee or the owner." (*Op. cit.* in footnote 1, at p. 116.) Proposed legislation dealing with civil liability for pollution damage caused by drilling rigs will consider all such craft (including semi-submersible platforms) vessels if they are not actually engaged in drilling operations. Conversation with Byråsjef Karin Bruzelius, Justisdepartementet, 26 November 1976. In practice, no problems have yet arisen concerning the classification of a drilling unit as a "vessel" or "installation."

12. 1972 Decree, S. 51.

13. See above, p. 441.

14. Petroleum Production licence granted 15 November 1974, S. 15; reproduced in *Report No. 81*, Appendix 7.

Commission, "Law on Liability, Etc. for Pollution Damages in Connection with Exploration for and Production of Natural Resources,"[15] is likely to be enacted in the near future, now that the Convention on Civil Liability for Oil Pollution Damage has been agreed and is open for acceptance.[16] The Report includes a draft law which establishes a strict liability standard for all pollution damage caused by the petroleum development operations, even if the injury was caused by an independent subcontractor.[17] Claims pursued according to the objective liability standard would be channeled through the licensee. Although the Commission recommended that liability be unlimited, inclusion of a liability ceiling in the Convention is likely to restrict the new law to a similar limitation in cases involving other States Parties.[18]

C. Civil Liability for Pollution Damage from Vessels

Chapter 12 of the Act of 20 July 1893 (as amended) is the Norwegian legislation providing authority under which the 1969 Civil Liability Convention (hereafter, the Convention) and the 1971 Fund Convention (hereafter, the Fund) are implemented.[19] The provisions of

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15. Ministry of Industry, *NOU 1973: 8*. (Available only in Norwegian.)

16. See above, pp. 223 *et seq*.

17. *Report No. 25*, p. 38. The licensee is therefore expressly made liable for damage occasioned by the acts of a drilling subcontractor.

18. The Norwegian law is expected to follow the new Civil Liability Convention very closely. Conversation with Byråsjef Christian Hambro, Ministry of Environment, 12 November 1976.

19. The unofficial translation of Chapter 12 from Norwegian into English was made possible by a grant from the Ford Foundation.

Chapter 12 contain few deviations from the Convention or the Fund. Moreover, it is expressly provided that Chapter 12 is to be construed so as to be consistent with obligations imposed by "convention" upon Norway in respect of States non-Parties.[20] The consideration of Chapter 12 will therefore be limited to a discussion of those Sections which differ from the two Conventions and a brief description of the remaining provisions.

1. Sections differing from the Convention and/or Fund

a) introduction

The owner of a ship carrying oil in bulk is strictly liable for oil pollution damage as well as for costs incurred for reasonable measures to prevent and mitigate injury.[21] Chapter 12 taken in its entirety does not apply to losses incurred outside the territory of a Contracting State,[22] to ships not transporting oil in bulk,[23] to non-persistent oils,[24] or to Government ships,[25] but certain provisions of the Chapter do differ from the Convention in respect of

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Although Norway has ratified both the Convention and the Fund, the latter will not become incorporated into Norwegian law until it comes into force. S. 277.

20. S. 284. It is suggested that this provision was included in Chapter 12 *ex abundanti cautela* and merely makes express the existing rule of international law that a State may not claim more rights under a treaty than were granted.

21. S. 267(1). The definitions of terms employed by Chapter 12 are consistent with the Convention and the Fund.

22. S. 282(1).

23. S. 267(1).

24. S. 267(2).

25. S. 283(1).

these four subjects. These deviations are based upon Norwegian sovereignty rather than the Convention. Table IX-2 on the following page tabulates these aberrations.

b) preventive measures

S. 282(1) provides, *inter alia*, that Ss. 267-272 and 276 apply to preventive measures *irrespective of where the measure has been implemented.*[26] As observed earlier, this provision only makes explicit what is implied in the Convention.

c) loss on the high seas

S. 282(2) states that Ss. 267 and 268 shall apply to cases of loss or damage on the high seas *when Norwegian provisions on compensation are applicable.*[27] The context of the term "Norwegian provisions" indicates that the reference is to "other" Norwegian provisions--not to this Chapter which governs compensation under the two Conventions. It is clear, therefore, that S. 282(2) does not purport to extend the Convention or the Fund to damage incurred on the high seas. The effect of S. 282(2) is merely to provide that when Norwegian law rather than the Conventions is applicable, the provisions of Ss. 267 and 268, concerned with owner's liability and owner's exemptions respectively, shall apply.

d) waiver of "bulk carriage" requirement and "oil" restriction

S. 282(3) presents a case similar to that just discussed. Subparagraph 3 of S. 282 provides that Ss. 267 and 268 shall apply to cases of damage in Norwegian territory *even when oil is not being*

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26. Emphasis added.

27. Emphasis added.

TABLE IX-2

PROVISIONS WHICH DIFFER FROM THE CONVENTION AND/OR FUND

Differing Provisions	Sections of Chapter 12 Affected						
	S. 267 Owner's Liability	S. 268 Owner's Exemptions	S. 269 Liability Channeling	S. 270 Liability Limitation	S. 271 Limitation Fund	S. 272 Lifting of Arrest	S. 276 Claims Against Insurer
S. 282(1) Preventive measures may be applied anywhere	x	x	x	x	x	x	x
S. 282(2) Norwegian provisions regulate compensation for loss on high seas	x	x					
S. 282(3) Waives "bulk carriage" requirement and oil restriction	x	x					
S. 283(2) Applies to Government ships. Waives carriage of oil in bulk requirement and includes all oil	x	x	x	x			

carried in bulk and even when the "oil" falls outside the definition of that term employed in the Conventions.[28] S. 282(3) represents the draftsmen's efforts to apply the definition of strict liability employed in the Conventions to cases which clearly fall outside their ambit--an instance of terminology standardisation no doubt intended to impart the virtue of consistency to the overall framework of civil liability for vessel-source pollution. The limitation of this expansion in scope to Ss. 267 and 268 indicates that there was no intention to extend the schemes set out in the Convention or the Fund.

e) application to Government ships

S. 283, concerned with Government ships, raises an issue of international customary law. After affirming in its first paragraph that "the provisions of this *chapter* do not apply to warships" and other Government ships employed for non-commercial purposes, S. 283(2) asserts that Ss. 267-270 *will* be applied to such ships which cause damage in Norwegian territory.[29] Furthermore, Government ships are subject to the provisions of Ss. 267-270 no matter what kind of oil they may be carrying and whether or not they are carrying it in bulk.

As indicated in Table IX-2 on the preceding page, S. 283(2) applies the Conventions' provisions concerning owner's liability and owner's exemptions to Government ships, and makes such vessels subject to the liability and limitation provisions as well. Although

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28. Emphasis added. "Oil" as defined by S. 282(3) also includes "oil-containing mixture."

29. Emphasis added.

this is a more difficult question than was the case regarding S. 282(2) and (3), the same distinction may be made between claiming unauthorised convention rights on the one hand, and, on the other hand, incorporating selected Convention provisions into the municipal legal framework. As the rights claimed in the latter case are based upon customary law, there is no question of exceeding the scope of the Convention or Fund.

However, even if this hypothesis is tenable in this case, it raises a fundamental question: *is* S. 283(2) consistent with the international customary law upon which it is hypothetically based?

It is a generally accepted rule of international law that war-ships and Government ships in non-commercial service sailing on the high seas enjoy "complete immunity from the jurisdiction of any State other than the flag State."[30] Furthermore, even in the territorial sea, the coastal State's customary law rights to interfere with the ships in question are subject to some limitation.[31] In view of these norms, the question posed in the preceding paragraph can be framed more precisely: does S. 283(2) represent an exercise of *jurisdiction* inconsistent with international customary law? This inquiry may be answered by considering what is meant by "jurisdiction."

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30. High Seas Convention, Articles 8(1), 9.

31. Territorial Seas Convention, Sections B, C, and D. There is some question concerning the nature and extent of the doctrine of innocent passage which limits the coastal State's right to interfere with foreign flag vessels in its territorial sea (see the discussion of international customary law above, at p. 89, and the account of the emerging law of the sea, at p. 197). Moreover, the Territorial Seas Convention does not purport to be declaratory of international customary law, and has not been widely ratified. The question of coastal State jurisdiction in its territorial sea is, therefore, at present one which cannot

It has been pointed out that "jurisdiction" actually consists of two components: jurisdiction to prescribe law and jurisdiction to enforce law.[32] Jurisdiction to prescribe law refers to the right to make municipal legislation apply to individuals. It is concurrent; that is, an individual may be subject to the laws of several States simultaneously. Conversely, jurisdiction to enforce municipal law is exclusive: only one State at a time may actually exercise enforcement jurisdiction. In the case of ships, an individual thereon may be subject to the simultaneous application of municipal law from a State in whose territory the ship is located, the flag State, and the State of which he is a national. The individual in question would be subject to the enforcement jurisdiction of the territorial State, flag State and State of which he is a national, in that order, depending upon his location.

When this explanation is applied to the issue of Norwegian jurisdiction over foreign warships and Government ships, it is evident that S. 283(2) is entirely consistent with international customary law. Norway has the right to *apply* her law to such vessels; as she has made no attempt (in legislation or fact) to *enforce* S. 283(2), that provision must be held to be valid.

f) liability channelling

S. 269, "Channelling of liability etc.," is remarkable because it expressly provides that liability for loss or damage cannot be

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be defined with precision.

32. Cheng, B., "Crimes on Board Aircraft," 1959 *Current Legal Problems*, pp. 177 *et seq.* Professor Cheng uses the terms "jurisfaction" and "jurisaction" to refer to jurisdiction to prescribe and jurisdiction to enforce.

imposed on a salvor unless he is acting in violation of a prohibition imposed by Government, the shipowner, or the cargo owner.[33] Although this provision is clearly consistent with the Convention's objective of channelling liability through the shipowner, it does not appear in that instrument.[34] It will be recalled, however, that a clause expressly exempting the salvor from liability *is* included in the U.K. Merchant Shipping (Oil Pollution) Act 1971 which incorporates the Convention into British law.[35] The explanation for the inclusion in the British Act undoubtedly accounts for the provision in S. 269: such protection was thought necessary to enable efficient salvage operations.[36]

2. Other provisions

The Convention requirements concerning vessel insurance and certification are detailed in the Provisional Regulations Concerning Insurance and other Financial Security against Liability for Oil Pollution Damage and Regarding Certificate.[37] As required by the Convention, Norwegian ships sailing anywhere and foreign ships

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33. In the case of prohibition imposed by the ship or cargo owner, liability may be imposed on a salvor only if he is not a public authority. S. 269.

34. The Convention expressly exempts only "the servants or agents of the owner," a construction which could be construed as too narrow to protect a salvor employed by the Government pursuant to powers authorised by the Intervention Convention.

35. S. 3(b) of the U.K. Act. See above, p. 402.

36. See above, p. 402, at footnote 28.

37. These Regulations were issued pursuant to, *inter alia*, S. 274 of the Act of 20 July 1893 and entered into force 19 June 1975, pursuant to S. 28 of the Regulations. An unofficial English translation was kindly made available to the writer by the Norwegian Justice Department.

in Norwegian ports are required to maintain insurance or other security to cover possible liability.[38] Norwegian ships and all foreign ships entering Norwegian ports must also carry a valid certificate attesting that sufficient insurance or other financial security is in force.[39] The Norwegian Maritime Directorate is empowered to issue certificates for Norwegian ships and non-Convention ships.[40] Convention ships from other States must carry certificates issued by the appropriate authority of that State.[41] State ships subject to the Convention (that is, Government ships on commercial service) are also subject to the insurance requirement, although a certificate from that State confirming State ownership and an assurance that liability pursuant to the Convention would be covered may be provided instead.[42]

Any ship which is found not to carry a valid certificate may be

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38. Regulations, S. 2(1), (2); Chapter 12, S. 273(1), (2).

39. Regulations, Ss. 3, 7, 8. This includes non-Convention ships as well. Although the Convention does not require Contracting States to require that non-Convention ships entering or leaving the Contracting State's ports carry a certificate, it is submitted that certification is a reasonable means of implementing the obligation that is imposed, *viz.*, that each Contracting State shall ensure under national legislation that such vessels actually carry such financial protection. Convention, Article VII(11). The U.K. Merchant Shipping (Oil Pollution) Act 1971 contains a similar provision in its S. 10(2).

40. Regulations, Ss. 3, 8. The Maritime Directorate may issue a certificate to a non-Convention vessel if cargo onboard is destined for Norway. Certificates issued by the U.K., Denmark, and Sweden to non-Convention vessels are also recognised. The actual checking of certificates in Norwegian ports is done by customs officials. Conversation with Mr. J. Odland, Norwegian Maritime Directorate, 19 November 1976.

41. Regulations, S. 7; Chapter 12, S. 273(2).

42. Regulations, S. 2(3); Chapter 12, S. 273(3).

denied entry into or be forbidden to leave a Norwegian port, or may be ordered to discharge her cargo or to be moved.[43] The authority to prevent a vessel from sailing, discussed above in connection with the Convention and the U.K. Merchant Shipping (Oil Pollution) Act 1971, is not inconsistent with international law if it is applied in a non-discriminatory manner.[44] The Norwegian Regulations are actually somewhat more conservative than the British Act in regard to authorising sanctions against vessels which do not comply with certification requirements: both national laws provide for actions with respect to the ship, but the British Act authorises the imposition of a fine as well.[45] The U.K. scheme would appear to be slightly better drafted to achieve the assurance of compliance required by the Convention in that a master faced with a fine (even if it is to be paid by the ship owner) in addition to a delay while a certificate is prepared is arguably less likely to gamble that he will not be caught without the proper evidence of financial responsibility than were the only consequence of his behaviour that he missed his sailing date, although it is recognised that failure to meet delivery commitments can be

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43. Regulations, S. 16. "Port" would include a single point mooring buoy on the Norwegian continental shelf as well as the territorial sea. *Cf.* U.K. Merchant Shipping (Oil Pollution) Act 1971, S. 10(2) which includes "a terminal in the territorial sea of the United Kingdom" but omits consideration of loading from installations on the continental shelf.

44. See above, p. 408.

45. If a ship has not been issued a certificate, the master or owner may be fined up to £35,000 on summary conviction. If a certificate has been issued, but it is not on board or the master fails to produce it, the master is liable to a fine on summary conviction not to exceed £400. U.K. Merchant Shipping (Oil Pollution) Act 1971, S. 10(6), (7).

expensive.

In the event of a decision to take action against an offending ship, written notification of the charges must be provided.[46] In the case of a foreign vessel, the Norwegian Maritime Directorate must send written notification to the consul or to the diplomatic representative of the State involved.[47] A further safeguard against abuse of authority by the Maritime Directorate is provided by a provision for appeal.[48] There is not, however, in either these Regulations or the British Act, a clause providing for compensation to the shipowner in the event of unjustifiable interference with his vessel.[49] This is no doubt a legacy of the Convention which also contains no such provision; as a practical matter, however, neither Norway nor the U.K. (as maritime States sensitive to possible retaliation) is likely to create a situation calling for a compensation clause.

The Sections of Chapter 12 concerned with the liability limitation provisions of the Convention and the creation of a Fund conform closely to the international instruments. Pursuant to the Convention provisions, the shipowner is entitled to limit his liability to 2,000 francs per ton of the ship's tonnage, not to exceed 210 million

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46. S. 17 of the Regulations states that both the owner and the master must be notified immediately. Notification must also be sent to the police, customs and pilot authorities and, in the case of Norwegian ships, to the ship's registrar.

47. S. 17.

48. Appeal is from a decision of the Maritime Directorate to the superior Government organisation, the Ministry of Commerce and Shipping. S. 18.

49. There *is* a provision in the Intervention Convention as well as the U.K. and Norwegian implementing legislation.

francs.[50] To avail himself of limited liability, the shipowner must establish a fund at the court where the case is being heard.[51] Distribution of the fund is proportional,[52] one who has paid compensation has a right of subrogation against the fund,[53] and the owner's claims for reasonable expenses incurred for pollution prevention measures are considered equally with other claims.[54] When the owner has established his right to limit liability in accordance with the Convention, no claim may be made against his property, nor may his ship be arrested.[55] In accordance with the Convention, claims may be made directly against the insurer or other person having provided security for the owner's liability.[56]

In addition to the compensation available to a claimant under those provisions of Chapter 12 which implement the Convention, a right of compensation will become available to him pursuant to the Fund Convention when that instrument comes into force.[57] S. 277 provides

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50. S. 270. Liability limitation is not available if the incident occurred as a result of the actual fault or privity of the owner.

51. S. 271(1). The competence of Norwegian courts is set out in S. 279.

52. S. 271(2).

53. S. 271(3).

54. S. 271(4).

55. S. 272(1). This protection also applies if the owner has constituted a limitation fund in another State Party, provided that the claimant has access to the court or other authority administering the fund and this actually is accessible to him. S. 272(2).

56. S. 276(1). The insurer may avail himself of the protection afforded by the owner's limitation fund or constitute a separate fund. S. 276(2).

57. S. 277(1). As of January 1977, the Fund Convention had

that when the Fund becomes effective, it "will be enforced as law in this state." In consequence, little provision was necessary in Chapter 12 to set forth rights and duties. S. 278, concerned with the contributions to the Fund and the "contributing oil"[58] upon which such dues are based, is perhaps the only remarkable provision. This Section provides that not only is oil transported by sea to Norway subject to assessment (as provided by Article 10(1) of the Fund), but oil carried by other means is assessable as well, if it is first transported by sea to a State not Party to the Fund. Thus, oil landed in Sweden and transported by road or rail to Norway, or oil piped from the U.K. to Norway would be "contributing oil" even if neither State at which it was first landed were a Party to the Fund. This safeguard against importers attempting to avoid the imposition of a duty upon their goods would be understandable if it sought to prevent an evasion likely to occur. Such an evasion is very unlikely, for the reason that Norwegian oil will come primarily from her continental shelf and be landed either directly by pipeline or tanker, or come *via* the U.K. by tanker. Some imports from the Middle East will remain necessary in order to supply the necessary "mix" of petroleum, but this will also be landed directly in Norway by tanker. Furthermore, most of Norway's neighbours (Denmark, Sweden and the U.K.) have accepted the Fund Convention.[59] Thus, the probability

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sufficient ratifications but still required additional "contributing oil" to enter into force. See above, p. 246.

58. "Contributing Oil" means crude oil and fuel oil as defined by the Fund Convention in Article 1(3). It is therefore a much wider definition of oil than that which is the subject of the Convention.

59. See Table X-4, p. 564. Finland has not accepted the Fund Convention.

of oil being transported to Norway other than by tanker from a State non-Party to the Fund seems remote indeed.

D. The Nordic Convention on the Protection of the Environment

The Convention on the Protection of the Environment, among Denmark, Finland, Norway and Sweden, was given effect as law in Norway by the Act of 9 April 1976.[60] This regional Convention in essence provides persons injured in a State Party with a right to seek legal and equitable relief in another State Party.

1. General provisions

Any person[61] in one Contracting State or working on its continental shelf[62] who is or may be injured by nuisance caused by environmentally harmful activities[63] in another Contracting State or on its continental shelf may institute an action before the appropriate

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60. The unofficial translation into English of this brief Act was made possible by a grant from the Ford Foundation. The Convention appears at 13 *International Legal Materials* 591-597 (1974).

61. The broad scope of the term "person" compared to "national" or even "resident" indicates that even a visitor to Norway would benefit from the Convention.

62. Article 13 provides that the Convention applies to the continental shelves of States Parties.

63. Article 1 provides that "environmentally harmful activities" means the *discharge* from the soil, buildings or installations, of wastes, gases or other substances, into watercourses, lakes or the sea. The term also includes the *use* of land, the seabed, buildings or installations in any other way which might cause a nuisance by environmental pollution. An illustrative list of ways in which such nuisance might be manifested is included. Pursuant to an appended protocol, "discharges" under Article 1 are classified as environmentally harmful activities only if the discharge entails or may entail a nuisance to the surroundings. This addition increases a plaintiff's task by requiring him to prove not only that a discharge has (or will) occur(red), but that such discharge will cause actual or potential nuisance.

court or administrative authority of the latter State:

1. To challenge the "permissibility" of such activities.

2. To seek injunctive relief and/or damages.

3. To appeal against a decision of a court or administrative authority.[64]

Fair treatment by the defendant's court is sought to be assured by provisions according the plaintiff the same rights of compensation and equitable remedies as those accorded to legal entities of the State in which the activities creating the nuisance are occurring.[65] This extends to rights of appeal as well.[66] Despite this attempt to ensure equality of treatment, it is possible for differing State laws to produce dissimilar results. As the Convention contains no provisions concerning applicable law, this will be determined by the choice of laws rules of the forum. Should this procedure require application of the laws of the place of damage, the result could be less favourable to the plaintiff than were the injury in the forum State.

2. Implementing machinery

Each State is required to appoint a "supervisory authority" as trustee of a nuisance-free environment.[67] The supervisory authority is granted standing to institute proceedings or be heard by the appropriate court or administrative authority of the nuisance-exporting State *if* the supervisory authority of that State would have had

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64. Article 3.

65. *Ibid.*

66. *Ibid.*

67. Article 4(1).

standing had the situation been reversed.[68] This requirement of reciprocity, reminiscent of the "optional clause" of the Statute of the I.C.J.,[69] also applies to appeals.

Several Articles deal with communication among interested parties. Article 5 requires the "examining authority" (the court or administrative authority investigating the complaint) to forward copies of relevant documents to the supervisory authority of the other State if publication is required under the law of the forum and if he finds that the activities complained of do or will entail "significant" nuisance in "another" Contracting State.[70] The supervisory authority in the plaintiff's State shall also be given adequate notice of appropriate meetings and inspections, and he shall be kept informed of relevant developments as well.[71] The supervisory authority in the defendant's State is required to publish relevant information in the local newspaper or in some other suitable manner if in his opinion it

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68. Article 4(2).

69. Statute of the International Court of Justice, Article 36(2): "The states parties to the present Statute may at any time declare that they recognize as compulsory *ipso facto* and without special agreement, in relation to any other state accepting the same obligation, the jurisdiction of the Court .... ."

70. The Convention contains no criteria for the evaluation of what might be significant; in consequence, the examining authority is vested with very wide discretion to make this determination. The use of the term "another" to describe the Contracting State suggests that significant nuisance found in such a State would invoke the obligations of this Article even if it were not the State in which the plaintiff claimed injury.

71. Article 5. The supervisory authority in the damaged State shall likewise be provided with an opportunity to make an on-site inspection "if necessary." The question of who determines the necessity of such an inspection is left open.

is necessary on account of public and private interests.[72] In cases in which the actual or possible nuisance would be "considerable" in another Contracting State and the permissibility of the activities is being considered by the appropriate Minister or Ministry of the State in which they would be located, consultations between the two Governments shall occur at the request of the former.[73]

The Convention provides for arbitration by a seven-man Commission at the request of either State in cases of such importance as to require consultation.[74] The Commission, perhaps more accurately described as an "arbitral tribunal" in that it is an *ad hoc* body constituted for that limited purpose, consists of three members from each State plus a chairman, who is appointed jointly by the parties and the members.[75] It is interesting, though probably of little practical significance, that the *parties*, non-States, are accorded authority to participate in the constitution of an arbitral tribunal. This unusual provision certainly does not accord the parties status as subjects of international law, but it is similar to the recent Conventions on human rights in that it makes the distinction between individual and State slightly less distinct than it was before. Perhaps more important--and regrettable--is the omission of any provisions to ensure that

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72. Article 7. The supervisory authority must also institute such investigations of the effects in his own State as he thinks necessary.

73. Article 11. Although there are no criteria provided for determining what might be considered "considerable" nuisance, the requirement that examination be in progress by the Government or on the Ministerial level is an indication that the situation must be somewhat serious.

74. Article 12(1).

75. *Ibid.*

the tribunal indeed comes into being even if one State refuses to appoint its members within a reasonable time, or the members and parties are unable or unwilling to agree upon a chairman.[76] It may well be that such safeguards are self-defeating generally[77] and unnecessary in this case in regard to the States which enjoy harmonious relations--but it must be remembered that a party may well wish to take advantage of an opportunity to delay the proceedings or to hold out for a chairman thought to be more sympathetic to his view.

3. Relation to civil liability from petroleum development

This Convention will facilitate equitable or legal action to prevent, control, mitigate, or compensate for damage caused by operations on the continental shelves of the States Parties. As a practical matter, only Norway is affected by this provision because the other Parties do not at present have significant oil development operations on their continental shelves.

The treaty applies to damage caused on the continental shelf or in the territory (including the territorial sea) of Contracting States. Coastal oil pollution and debris dumped on the continental shelf are clearly the sorts of damage contemplated by the Convention, but other possible injuries are less clear. Tainting of fish by oil, for example, would be covered by the Convention if the fish were in the territorial sea at the time they were injured. On the other hand,

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76. *Cf.* the *Interpretation of Peace Treaties* case in which the refusal of one side to appoint members of an arbitral tribunal prevented that method for the peaceful settlement of disputes from functioning. I.C.J. Reports (1950), p. 65.

77. See Johnson, D.H.N., "The Constitution of an Arbitral Tribunal," 30 *British Yearbook of International Law* 152-177 (1953).

a fisherman who caught tainted fish on the high seas could not avail himself of the Convention. A question yet to be resolved is whether fish tainted on the high seas but caught in the territorial sea constitute damage sustained in a Contracting State.[78]

E. Conclusions

Norway is in the van of States which are changing the law of compensation for marine pollution damage. The Norwegian view is that even a careful entrepreneur ought to be responsible for the consequence of his speculative activity. Norway is restrained in manifesting this philosophy by other States. This is particularly true of global Conventions (for example, the 1969 Civil Liability Convention), but less true of regional agreements (the 1976 Convention, the 1974 Nordic Agreement). On the other hand, it is likely, in the writer's view, that both the Norwegian position in Conferences and the effect of such attitudes are influential indeed upon those States who must consider similar questions in other fora.

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78. Conversation with Byråsjef Christian Hambro, Ministry of Environ-Environment, 12 November 1976.

CHAPTER TEN

A MODEL LEGAL REGIME FOR THE NORTH SEA

A. Introduction

This chapter is composed of five main sections. This section summarises conclusions concerning the present legal regime and explains the writer's views concerning its deficiencies and possible remedies. Section B compares the British and Norwegian approaches to pollution control and compensation for damage and clean-up costs. Sections C and D contain proposals for regimes to control and compensate for pollution in the U.K. and Norwegian sectors, and in the North Sea, respectively. The writer's thoughts on the prospects for more effective control of marine pollution from offshore petroleum development both in the North Sea and elsewhere are set forth briefly in the final section.

1. Conclusions concerning the present legal regime

a) causes and effects of marine pollution

The most likely cause of short-term environmental injury is a massive tanker oil spill which reaches the coastline. This incident is also the most obviously expensive in clean-up costs and property damage. This conclusion suggests that tanker safety ought to be a priority concern and that ratification of conventions promoting this objective is indeed important. Moreover, the work of such organisations as IMCO and the ILO should be offered every encouragement.

Two further conclusions have resulted from the investigation of causes and effects of marine pollution. First, it is generally agreed among scientists that we simply do not understand the long term effects of pollutants in the marine environment. This is a source of particular concern in regard to chronic discharges, such as those associated

with the operations of installations or vessels. The second conclusion follows from the first: although we are presently unable to predict long-term effects of substances discharged into the marine environment, the possibility that permanent damage is being done is a powerful argument in favour of protective legislation even though the need for protection cannot conclusively be proved. This is a factor which must be considered in the determination of national and (to the extent that it exists) international public policy.

b) the present legal regime of marine pollution control

Two basic conclusions emerge from the analysis of the present legal regime of marine pollution control in the U.K. and Norwegian sectors of the North Sea. First, it is composed of independently developed components which remain uncoordinated. This is true both in the case of comparative national legislation (for example, the differing standards and enforcement provisions of U.K. and Norwegian law concerned with installation construction and operation) and, more importantly, in respect of the present legal regime *per se*. A complex of conventions, agreements, informal understandings and voluntary arrangements is administered by a variety of inter-governmental, governmental and private bodies. Distinctions are made according to substance, pathway into the marine environment, and whether the act was accidental or intentional. It makes a great deal of difference in compensation for damage suffered whether the claimant is a Government or a private individual and whether the claim is for property damage, damage to the environment, or clean-up or prevention costs.

Two understandable but undesirable effects result from this legal regime developed by evolution. The first effect is that there are gaps

among the regulations; for example, it is provided that the coastal State may interfere with a foreign flag vessel on the high seas to prevent oil pollution, but there is no analogous provision in the case of a vessel in imminent danger of collision with an offshore installation. Another result of the present uncoordinated legal regime is that insufficient control is exercised to prevent transfers of pollution from one source to another. For example, restrictions on ocean dumping may cause undesirable forms of land disposal, burning oil to protect beaches may cause air pollution, and the use of dispersants to break up oil slicks may injure organisms in the water column. An effective scheme of environmental protection should provide that the possible transfer of pollution must be considered as part of the decision making process.

The second conclusion resulting from analysis of the present legal regime is that environmental protection is determined by a complex of societal values, not only by scientifically-determined need. This conclusion was particularly evident in the attitudes of the U.K. and Norwegian delegations to the Inter-governmental Conference on the Convention on Civil Liability for Oil Pollution Damage from Offshore Operations. For reasons discussed in connection with the 1976 Convention, the U.K. delegation favoured an instrument which would permit rapid exploitation of her offshore petroleum resources; Norway was more concerned with the integral reparation for pollution damage. This illustration is an apt reminder that any proposal for the control of marine pollution from offshore petroleum development must consider many factors--technical, economic, social and political as well as scientific.

2. Recommendations for an improved legal regime

a) immediate action

Just as it may be necessary to provide legal protection for the environment before it is clear what form that protection ought to assume, so the need for immediate action suggests that initial concern ought to be with regulation which is uncontroversial. Where protection can be effected by separate agreement, partial agreement to a more comprehensive instrument, or an informal arrangement, the opportunity to effect that protection ought to be seized immediately. This approach does, however, require vigilance to prevent what is accepted as a minimum first measure from becoming enshrined as the ultimate standard.

b) North Sea management

The North Sea is an irreplaceable asset which, though "belonging" to no State, is in effect the *mare nostrum* of its littoral States who exercise sovereign rights over its continental shelf and use it most intensively. Petroleum development is a subordinate "wasting asset" of the North Sea. A few decades from now the petroleum assets of the North Sea are likely to be insignificant. Emphasis will be on other uses of the area; it is suggested that two very important uses will be fishing and the placement of nuclear power plants for energy production. Fishing may become far more important than it is now if rising global population increases the demand for (and value of) food. It is the writer's view that offshore nuclear power plants, such as those proposed for the U.S.,[1] offer such advantages (cooling water,

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1. See, U.S. Congress, Office of Technology Assessment, *Coastal Effects of Offshore Energy Systems*, an Assessment of Oil and

isolation from potential radiation victims and from terrorists) that they may well be adopted by the North Sea States to replace petroleum-fired generating capacity. It is essential that the North Sea be managed towards objectives agreed upon by all the littoral States.

c) characteristics of an ideal legal regime for the North Sea

i) the requirement that it be comprehensive

A comprehensive legal regime would include all aspects of sea use planning. The control of marine pollution would be determined in accordance with overall objectives and would be coordinated with control of land and air pollution. Because pollution control depends on multiple factors and affects the interdependent parts of the environment, it is suggested that a comprehensive legal regime is necessary for optimum pollution control.

ii) basic tasks: standards, enforcement, compensation for injury

Standards for discharges, vessel construction, etc. should be set by a central authority and be based on scientifically determined need and coordinated with North Sea management objectives. Regional standards for petroleum development should be harmonized to the extent practicable with international standards and those of other regions. Regional standards for vessels--especially construction and manning requirements--should be set in accordance with the international law *lex lata*. The North Sea States, perhaps acting through the central authority, should attempt to gain "special area" status for the North Sea, should the RSNT provisions in this regard be adopted.

An ideal legal regime would break new ground in providing for

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Gas Systems, Deepwater Ports, and Nuclear Powerplants off the Coast of New Jersey and Delaware, Vols. I and II, Washington, D.C. (1976).

reciprocal inspection and enforcement and would include a multi-national police force. North Sea States, recognising their common interest in ensuring conformity to agreed standards and trusting to mutual *bona fides* and formal safeguards, should agree to exchange inspection and enforcement rights in respect of both vessels and installations. Each State would be empowered to exercise the same rights in respect of other North Sea State vessels and installations as it could exercise in the case of its own vessels and installations. Moreover, a multi-national police force should be established with the responsibility of dealing with enforcement of regime standards at sea, law enforcement on installations and vessels in emergencies until relieved by the Controlling State, and the prevention of terrorism. It is recognised that, especially with regard to the exercise of national police powers, this concept is revolutionary indeed.[2] Nonetheless, it is suggested that the economic advantages of combination inherent in such a proposal (such as prorated patrolling costs) would provide an incentive sufficient to permit acceptance of the scheme.

An ideal legal regime should provide for integral reparation in the event of pollution damage to persons or the environment. This

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2. One writer has listed five of the rare examples of international sea policing: 1) The Hague Convention of 6 May 1882 (as amended in 1955) among Belgium, Denmark, France, the U.K., the Netherlands, and Germany (relating to the policing of fisheries). 2) The Hague Convention of 16 November 1887 among the same States (relating to the abolition of liquor trading in the North Sea among fishermen). 3) The 1884 Paris Convention on submarine cables. 4) Provisions prohibiting slave trade. 5) The regulation in the Geneva High Seas Convention concerning piracy. Breuer, G., "Case Study on Technical Management of the North Sea," 5 *Proceedings of the Law of the Sea Institute* 270-276, University of Rhode Island (1970).

objective would require that North Sea investment decisions include the cost of insurance. Liability for damage and clean-up costs should be absolute and unlimited. A claimant should not have to prove property loss in order to obtain compensation; it should be sufficient that he prove loss of income resulting from the diminution of natural resources or that funds are necessary for environmental restoration.[3] A Fund constituted from contributions based on hazardous activities (for example, petroleum transfer) should be available to compensate victims if the defendant is unable to do so or if there is no identifiable defendant. Monies from the Fund should also be used to support research and development in connection with the preservation of the environment.

iii) possible legislative and administrative bodies

The creation and administration of a legal regime to protect the North Sea could be entrusted to one or more of the following: the coastal State, the flag State, the port State, and/or an authority. The need to harmonise the law of environmental protection in order to proceed efficiently towards mutually defined objectives may be best

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3. Several Bills being considered by the U.S. Congress contain such provisions. For example, S. 2666 (Bidden) (94th Congress, 1st Session, 13 November 1975) provides that a victim may claim for "any loss of income or impairment of earning capacity due to damages to real or personal property, including natural resources, without regard to ownership of such property or resources, that is damaged or destroyed by a discharge of oil, if the claimant derives at least 50 per centum of his earnings from activities which utilize the property or natural resources." S. 3(7)(C). A Fund constituted from fees levied on oil transfers may be used for "research into methods for preventing, containing, and removing discharges of oil" in addition to providing compensation for injury. S. 7(b)(D). See also S. 521 (Jackson), S. 1754 (Magnuson), S. 2162 (Magnuson, at the request of the Administration), H.R. 6218 (Murphy), H.R. 9293 (Sulivan, at the request of the Administration), and H.R. 10756 (Studds).

fulfilled by the creation of a central authority to set agreed standards. The most desirable form of enforcement is a more difficult issue.

The central arguments both for and against coastal State enforcement of agreed standards concern its perceived self-interest in undertaking that activity. On the one hand, it can be argued that the coastal State is the most interested in the environmental protection of its adjacent waters, and is in the best geographical position to do so. Conversely, it has been pointed out by critics of coastal State enforcement that the coastal State may view "work to rule" enforcement as desirable, perhaps to encourage commerce and energy production.

The case for flag State jurisdiction in the case of vessels rests almost entirely on the freedom of the seas doctrine of which it is an integral part. The principal defect of this type of enforcement, *mala fides* prosecution by the flag State, would probably not be a major problem among a small group of North Sea States. However, even assuming that this responsibility is fulfilled in a conscientious manner, the flag State may be so remote from the site of the act that its good intentions are without effect.

Conferring jurisdiction to enforce vessel pollution control standards on the State in whose port the suspected vessel arrives offers the substantial advantages of minimal interference with navigation and early access to evidence (for example, the Oil Record Book and the residues present in the vessel's tanks). On the debit side, it has been observed that unless port State responsibility for enforcement is made mandatory (perhaps shared with another of the possible

bodies which would also be obligated to prosecute an alleged offender transferred to it by the port State), the port State may view lax enforcement as in its best commercial interests.

The final suggested possibility is to vest authority and responsibility for standard enforcement in a regional authority agreed upon by the North Sea States. The authority could inspect vessels in the ports of the North Sea States using its own personnel or delegate the authority to undertake this task to the coastal State (with checks to prevent such delegation from becoming *de facto* coastal State jurisdiction) or to an independent body (such as a vessel classification society). However, the most significant possible advantage from vesting authority and responsibility for enforcement in a central authority is the opportunity to create a multi-national police force. It is also the most difficult to realise. The advantages of a multi-national police force to enforce agreed standards at sea may be distilled into a single word: efficiency. Even under an agreed scheme of reciprocal enforcement at sea a great deal of duplication is inevitable. Each State must decide, on the basis of its own public policy, how much to invest in standards enforcement, what equipment to use, the area to patrol, etc. This is a far less efficient arrangement than a multi-national police force which could be designed to advance North Sea management objectives and realise considerable savings from economies of scale. It would be possible to combine several duties now done by various subdivisions of North Sea State Governments, such as pollution prevention, safety of vessels and installations, fishery protection, and prevention of terrorism on installations. Unfortunately, the creation of such a body would entail a considerable relinquish-

ment of sovereignty, and it has been pointed out that there are only five rather unpersuasive precedents for an international oceanic police force.[4]

iv) the role of private agreements

It was concluded in Chapter Five that although private agreements have served a useful function their interest is in furthering corporate rather than public policy objectives. Nevertheless, the industrial concerns which dominate the petroleum industry employ sophisticated management techniques to utilise their considerable resources. A North Sea authority (or North Sea States individually) could well employ this expertise to attain its (or their) own managerial objectives. The crucial issue is how to employ efficient corporate machinery to undertake tasks which are likely to be at odds with corporate objectives. It is suggested that a general answer to this is, "make North Sea management objectives corporate objectives." This may be accomplished by ensuring that definition of those objectives is the exclusive province of the North Sea authority (or the several States), but leaving the means to accomplish those objectives with industry. Two problems may be encountered in pursuing this strategy.

First, as has been concluded, standard setting is not determined solely on the basis of scientifically determined need, and industrial lobbying in various forms is clearly one of several additional influences. Moreover, while setting of environmental protection standards without scientifically indicated need may be necessary, North Sea planners must consider that the cost of complying with standards will

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4. Breuer, G., *loc. cit.* in footnote 2.

be carefully considered in corporate boardrooms. It may well be that this supports the case for national oil companies (which, like other nationalised industry can be subsidised in the interest of public policy); however, those companies which must make a profit to stay in business may be tempted to curtail or abandon operations if standards are thought to be arbitrary and unwarranted.

The second obstacle is that technology is a critical factor in determining the law of marine pollution control, and that the pace, direction and extent of technology are determined in large part by the petroleum industry. The role of Government and independent research institutions is crucial, then, if petroleum interests are not to usurp State authority to set standards by the indirect method of determining what is and is not "practicable." It is suggested that a possible solution would be for the North Sea authority (and/or the several States) to invite bids for the solution of technological problems. For example, the authority might invite bids for the design and construction of oily-water separators capable of a specified performance from any individual or institution, public or private. It is submitted that this competition would provide the North Sea authority with a basis for the establishment of standards as well as stimulate the advancement of pollution control technology.

v) the role of the individual

What role ought the individual to play in an ideal legal regime of pollution control? The view in the U.K. is that the Government, the democratically constituted representative of the people, is capable of assuring that environmental considerations are part of public policy and that the integrity of the environment is preserved. In

fact, it is asserted, conferring standing on an individual to be heard in relation to an action that does not affect his property interests is conducive to vexatious litigation.[5] The Norwegian practice also tends to discourage individual or class actions by aggrieved individuals who do not have a direct proprietorial interest in the protested action. Individuals tend, therefore, to resort to political rather than judicial remedies.[6]

It is submitted that an ideal legal regime for the North Sea would include provisions for an individual to make representations before the central authority, even if his property interests were not affected. Any individual, whether or not a North Sea State national, would be entitled to bring a matter to the attention of the authority *ab initio* and to be heard during proceedings concerning North Sea pollution prevention. It is suggested that should a significant number of representations without merit (in the opinion of the authority) burden that body, a bond be required. It is suggested that the individual provides a necessary check on industry and Government. It is well known that the regulator and the regulated frequently develop an identity of interests which inhibits the former in the performance of its responsibilities. In the case of the offshore development of

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5. Conversation with Mr. J. Ashley, U.K. Department of the Environment, 10 June 1976.

6. Conversation with Professor Ottar Brox, Member of the Storting, 3 November 1976. Professor Brox, a minority party representative, contends that special interest groups, including environmentalists, can make their views felt more strongly through minority parties than by using the courts. As the Norwegian Labour Government needs the cooperation of minority parties, it is responsive to their views. This view was expressed to the writer by several other Norwegians in public and private capacities.

petroleum, the interchange of personnel between Government and industry suggests that this is a circumstance which must be particularly guarded against.

d) self interest: an obstacle to an ideal legal regime for the North Sea

It is well known that the closer to a State's perceived "vital interests" an issue is, the less likely that State is to agree to an "infringement of its sovereign rights" in order to permit compromise with other States.[7] It is the writer's view that, although this axiom is widely recognised, it is frequently absent from proposals for international cooperation. Law, no less than politics (from which it is frequently indistinguishable), is the art of the possible. The model legal regime suggested in this chapter is intended to be useful. This objective is more likely to be fulfilled by a proposal which is realistic than one which is Utopian, and compromises have been made accordingly.

e) a suggested approach to a model legal regime for the North Sea

i) build on existing agreements and institutions

The use of existing institutions and agreements has much to recommend it as a first step. This is particularly the case with conventions: North Sea pollution control would be greatly strengthened if all the littoral States could be persuaded to ratify existing international agreements. Table X-4 on pages 546-547 tabulates North Sea State acceptance of certain international conventions.

ii) employ successive approximations to an ideal legal regime

While it is recognised that States consider marine pollution

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7. See Cheng, B., "Centrifugal Tendencies in Air Law," 10 *Current Legal Problems* 200-228 (1957).

control as only part of a total public policy, it is an objective of this thesis to point out that it is an important part. It is suggested that States will find it easier to accept a proposed legal regime if it can be adopted in steps, rather than as a complex "package deal" as is being attempted at UNCLOS III. It is recognised that this approach may be criticised because: 1) it reduces the opportunities to "trade" positions on various issues and therefore inhibits compromise, and 2) a piecemeal approach may not only produce an uncoordinated result, but may create a regime likely to delay or prevent the establishment of a more comprehensive legal regime if States consider that no further action is necessary. The writer is not persuaded by these arguments. In rebuttal, it may be observed that time is a crucial factor. Establishment of a comprehensive legal regime is not only desirable--it is *necessary*, but the design and construction of an effective scheme is likely to take years, despite the common interests and mutual goodwill among the North Sea States. During this period it is desirable that certain minimal interim measures of protection be implemented. It is not beyond the competence of North Sea States to agree on such measures pending the completion of a legal regime designed expressly to implement North Sea management objectives.

It is proposed that the first step concentrate on bilateral agreements between the U.K. and Norway. There are two reasons for this approach. First, it is self-evident that bilateral agreement is more easily achieved than its multilateral counterpart: there are fewer divergent interests and the machinery of agreement (for example, voting procedure, ratification, etc.) is far simpler. Moreover, bilateral agreement may be selected by default and expanded, as it was in the

case of international carriage by air (in which a network of bilateral agreements now serves the function intended for a multilateral agreement which was not concluded).

The second argument for an initial phase involving only the U.K. and Norway is that insofar as control of pollution from offshore petroleum development is concerned, nearly all North Sea activity would be subject to such a regime. Of course, this may change, and it is recognised that jurisdiction to regulate vessel-source pollution would be limited to the two flag States plus vessels indirectly controlled through the offshore licensee. This would also be true, though to a lesser extent, in the case of a regional agreement.

The second step towards a desired legal regime is to expand the U.K. - Norway regime in both geographical and material scope. It is proposed that a regional regime to control North Sea pollution be created. A regional scheme is the smallest in geographical scope which could be truly effective. The importance of expanding the material scope of pollution control as well is amply illustrated by considering the contribution to North Sea pollution made by the Rhine. A regional agreement is, in the writer's view, a desirable arrangement to control North Sea pollution because it is extensive enough geographically to control most pollutants affecting the area, yet of a size permitting comparatively efficient management. Relatively common interests among the North Sea States would be an advantage in decision making.

A regional agreement, though suggested as the best approach to North Sea management, may influence pollution control outside that area in two ways. First, it is suggested that cooperative links with

other regional schemes (for example, the Baltic) are a natural development of the regional approach. Each regional authority would retain authority and responsibility for its own geographic area, but inter-regional agreement on standards and enforcement could prove desirable, and certainly sharing of information of common interest would further mutual goals. The second way in which regional arrangements may influence events beyond their geographic sphere is that a regional approach may become adopted by other regions or by the world community. It has been pointed out that the general acceptance of a 200 mile EEZ of some sort is the result of the Latin American approach to coastal State control of an extended offshore zone.[8] A North Sea authority would thus have an opportunity to influence the control of global marine pollution.

B. Assessment of the Present Legal Regime

This section summarises the U.K. and Norwegian approaches to the control of marine pollution from installations, vessels, and dumping, as well as the respective laws governing compensation for pollution damage and clean-up costs. See Table X-1 on the following page.

1. Control of operational discharges from offshore installations

a) United Kingdom

The United Kingdom requires that offshore operators use the best practicable means available to reduce the oil content of discharged effluent. Although the Prevention of Oil Pollution Act 1971 prohibits

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8. Hardy, M., "Regional Approaches to Law of the Sea Problems: The European Community," 24 *International and Comparative Law Quarterly* 336-348 (1975), at p. 327.

TABLE X-1

PRESENT LEGAL REGIME: CONTROL OF MARINE POLLUTION

Pollution Source	U.K.: Standard	U.K.: Enforcement	Norway: Standard	Norway: Enforcement
installations: operational discharges	best practicable means	DOT/Energy inspectors	best available means	PD/ME inspectors
installations: accidental discharges	standards set by DOT/Energy, and classification societies	DOT/Energy inspectors classification societies	standards set by PD	PD inspectors Det Norske Veritas
vessels: operational discharges	1969 IMCO Amendments	DOT inspectors	1962 IMCO Amendments	MD inspectors
vessels: accidental discharges	safety conventions, 1971 IMCO Convention, Intervention Convention	DOT inspectors classification societies	safety conventions, 1971 IMCO Convention, Intervention Convention	MD inspectors classification societies
debris dumping	Oslo Convention	MAFF/DAFS/DOT/ Energy	Oslo Convention	PD/ME/SPCA/MD Fisheries

the discharge of effluent with *any* oil content, production platforms generate operational oily water. Present oily water separation equipment cannot completely separate the two liquids; in consequence, the Department of Energy has decided to permit such discharges subject to a "best practicable" standard.

Enforcement of these standards is dependent to a large extent upon the cooperation of the offshore operator. Inspectors from the Departments of Energy and Trade visit offshore installations at least twice a year and check oily water separators and other pollution prevention equipment as part of their duties. The basic approach is to check the relevant equipment and to ensure that the operator knows that he will be held responsible for complying with the law.

b) Norway

The Norwegian approach to control of operational discharges from offshore installations is indistinguishable from that of the U.K. This is surprising, because the Norwegians are thought by many observers to manifest intense concern with environmental protection in detailed and specific regulations. In fact, there are no published discharge standards for operational discharges of oil from Norwegian production installations. As is the case in the U.K., Government policy is to require the use of the best available technology (considering economic and other factors) and to discuss permissible operational discharges with the operator. Inspectors from the Petroleum Directorate and the Ministry of Environment check compliance with this requirement but, as in the case of the U.K., a great deal of reliance is placed in the operator to ensure that the equipment is properly used.

c) conclusion

The problems of consequence associated with control of operational discharges from offshore petroleum development are scientific, technological and organisational rather than legal. Both Governments see the issue of oily water discharges from production platforms as comparatively minor and so it is, when compared to such possible sources of marine pollution as blowouts or tanker accidents. Nevertheless, it is of great importance that the long-term effects of chronic oil discharges from production platforms in the North Sea be determined with greater precision in order that a more rational calculus of risk becomes possible.

The technological limits of oily water separators determine legal standards. It is therefore important to guard against the possibility that offshore operators can determine standards because they effectively control the pace of technological development. Government and private institutions are needed to engage in competitive research.

In neither the U.K. nor Norway is there a clearly defined responsibility for the monitoring and enforcement of operational discharges from offshore petroleum development. In the U.K., the Department of Energy has general responsibility for enforcing the discharge standards from offshore installations. However, the Department of Trade also has responsibilities in this area, and it may be that the DOT will assume all or part of the responsibility for enforcing oily water separation standards.

Following a major reorganisation in Norway, it appears that the Ministry of Environment (or its subordinate department, the State

Pollution Control Authority) will be responsible for operational discharges from offshore installations--but this is not clear. The Petroleum Directorate is responsible for most installation standards and procedures, and has a corps of inspectors to enable fulfilment of that function. It is possible that the Petroleum Directorate will be entrusted with the task of checking compliance with oily water separation requirements in addition to its existing functions which include inspection of installation pollution prevention equipment.

In the writer's view, placing responsibility for enforcement of operational discharge standards in a department whose primary responsibility is to promote the production of energy raises potential conflict of interest problems. In considering such a subjective criterion as "best practicable/available technology" there is a danger that compromises which must be made will be unduly weighted in favour of a department's central concern. The appropriate department with responsibility for environmental protection ought to enforce standards the *raison d'être* of which is pollution control. The compromises necessary to resolve conflicting objectives pursued by various departments ought not to be entrusted to one of the contestants, but to be determined according to United Kingdom and Norwegian public policy.

2. Control of accidental discharges from offshore installations

a) United Kingdom

It is sought to prevent accidental discharges from seabed operations by requiring that installations meet certain safety requirements and that the licensee comply with Model Clauses contained in his licence. The Mineral Workings (Offshore Operations) Act 1971 provides the authority for a number of detailed Regulations concerned with

installation safety. The basic difference between the U.K. and Norwegian approaches is in the use of classification societies. The U.K. has designated a number of classification societies not only to inspect offshore installation, but *to set standards as well.* In this respect, the U.K. approach treats installations like vessels. Norway, on the other hand, employs Det Norske Veritas primarily for inspection, most standards being set by the Petroleum Directorate.

The U.K., unlike Norway, makes extensive use of Model Clauses in licences to require safety equipment and safe working practices. Those of particular relevance to this thesis concern drilling operations and the abandonment of wells. Enforcement of requirements intended to prevent accidental pollution from offshore operations is the responsibility of the Department of Trade and the Department of Energy, which use their own inspectors as well as receiving reports from the classification societies.

b) Norway

Norwegian legislation related to control of accidental pollution from offshore operations is contained in the 1975 and 1976 Decrees, concerned with exploration and production, respectively. As observed in the discussion of these instruments earlier, although a great deal of material formerly contained in the Decree relating to drilling has been relegated to Regulations, a substantial amount of detail remains. This is in part because standards are actually set by the Petroleum Directorate rather than the classification societies, and because Model Clauses are not used as extensively as they are by the U.K. Enforcement is by Petroleum Directorate inspectors, as well as by the classification society, Det Norske Veritas.

c) conclusion

The writer is not competent to comment on the relative merits of safety standards contained in U.K. and Norwegian legislation. However, it may be appropriate briefly to consider their divergent approaches.

Norway has chosen to develop Governmental capacity to set and enforce standards relating to the safety of offshore installations. The Petroleum Directorate therefore has direct control of an activity for which it is responsible.

However, delegation to classification societies of authority to set and enforce standards certainly does not imply abdication of responsibility by the U.K. Department of Trade. The DOT has, very wisely in the writer's view, merely decided to contract for expert services rather than develop essentially parallel resources. The U.K. approach thus places considerable stock in the maritime experience of classification societies as a foundation upon which to construct the new framework of norms designed to prevent accidents. The DOT of course remains responsible, while removal of the task from the Department reduces the possibility that compromises may be made for economic or political reasons.

The fund of experience which both the U.K. and Norway are accumulating will permit more specific requirements when they are found to be necessary. For example, the "good oilfield practice" standard may be difficult to improve upon as a means to control activities subject to rapid change or those which defy compartmentalisation, for example, creation of a duty to control a blowout as quickly as possible. On the other hand, it may be discovered in time that equipment

must be specified, or that certain organisational structure is necessary to effectively cope with emergencies.

3. Control of operational discharges from vessels

a) United Kingdom

The Prevention of Oil Pollution Act 1971 applies the 1969 IMCO Amendments to British ships on a voluntary basis. British ships outside U.K. waters in the North Sea must therefore comply with both the 1969 Amendments (the litres per mile formula) and the IMCO Convention as amended in 1962 (which makes the North Sea a "prohibited area"). Within U.K. waters no oil of any kind may be discharged.

There is at present no U.K. law controlling operational discharges of light oils, outside U.K. waters or of chemicals anywhere. Such discharges will be controlled pursuant to the 1973 IMCO Convention when that instrument comes into force. Although the U.K. intends to ratify the Convention, as yet no legislation is planned to enable its implementation.[9]

b) Norway

Norwegian vessels are currently regulated by the IMCO Convention as amended in 1962, and will soon be bound by the 1969 Amendments. The prohibition on oily discharges into Norwegian waters is limited to the oils and vessels to which the IMCO Convention applies.

There is no Norwegian law regulating the operational discharge of refined oils or chemicals from vessels. However, Norway intends to ratify the 1973 IMCO Convention, and a Draft Act to enable ratification was planned to be complete at the end of 1976.

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9. Conversation with Mr. Capel, Department of Trade, 28 March 1977.

c) conclusion

Operational discharges of persistent oil from tankers engaged in the transportation of North Sea petroleum does not appear to the writer to pose a potentially serious problem. Both U.K. and Norwegian tankers will soon be bound by the 1969 Amendments which are generally thought to be quite effective in preventing pollution of the sea by persistent oil. It is planned to continue the use of dedicated tankers fitted with segregated ballast tanks which characterised the initial Ekofisk operation so that there should be virtually no operational discharges of oil from this source. The control of foreign flag vessels not engaged in North Sea operations and outside the U.K. and Norwegian territorial seas is likely to remain subject to exclusive flag State jurisdiction until it is replaced by an EEZ which includes some form of coastal State authority to control vessel-source pollution.

It is a cause for serious concern that as yet there is no regulation of operational discharges of petroleum-related cargoes, such as refined oils and petro-chemicals. Both the U.K. and Norway have ambitious plans for the development of coastal petro-chemical complexes to process North Sea oil. There can be little doubt that much of this projected production is intended for export, that it will be transported by tanker, and that this will result in a different kind of risk for the North Sea. Apart from the issue of accidents (discussed below), it should be observed that tankers returning to U.K. and Norwegian ports (probably from Europe or North America) may well be "in ballast" and, unless fitted with segregated tanks or retaining cargo on board, will have to discharge contaminated water somewhere.

It is not only irresponsible, but probably contrary to international customary law to permit tank washing in mid-Atlantic. It is submitted that plans for the development of petro-chemical complexes *must* include adequate reception facilities as part of the projected cost. As discussed earlier, there are a number of difficult problems associated with the 1973 IMCO Convention, and it is unlikely to come into force soon. Nevertheless, both the U.K. and Norway could apply the Convention to their own ships voluntarily. Reception facilities would be a *sine qua non* to such action.

Enforcement of the present and proposed IMCO Conventions is dependent upon inspecting entries in a vessel's Oil Record Book. In the U.K., Department of Trade inspectors make periodic inspections of vessels in port to monitor compliance. The Maritime Directorate performs a similar function in Norwegian ports. Few authorities think that the system is foolproof; clearly a system which depends upon the subject of regulation to record his own behaviour is subject to abuse. It is submitted that the establishment of adequate reception facilities would complement the planned use of dedicated tankers fitted with segregated ballast tanks to help minimise operational discharges of liquid cargoes in the North Sea.

4. Control of accidental discharges from vessels

Limitations of time and space have precluded consideration in this thesis of laws intended to reduce vessel accidents. As major maritime nations, both the U.K. and Norway are parties to a number of international agreements concerned with vessel safety, for example the 1960 Safety of Life at Sea convention,[10] the 1972 IMCO Collision

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10. Cmnd. 2812 (1965). See also the Resolutions to amend the 1960

Regulations[11] which will become effective shortly, and several ILO conventions relevant to pollution control.[12] The U.K. and Norwegian merchant fleets enjoy excellent safety records,[13] but of course accidents may also occur to foreign flag vessels engaged in petroleum development work in the U.K. and Norwegian sectors of the North Sea. The writer found British and Norwegian officials somewhat reluctant to comment on control of such vessels through the licensees although it was indicated that this is done to some extent.

The 1973 IMCO Convention sets vessel construction requirements which are designed to minimise the effect of maritime casualties on the marine environment. Although neither State has legislation which requires its vessels to comply with the 1973 Convention, both the U.K. and Norway now apply the 1971 IMCO "Tanks Amendment" to new vessels.

The U.K. and Norway are also both Parties to the Intervention Convention, the only instrument discussed in this thesis dealing specifically with the control of marine pollution associated with a maritime casualty. It is noteworthy that the Norwegian Regulations depart from the Convention in that they authorise action when there is "imminent danger of a marine casualty" rather than "following upon a maritime casualty." Norwegian authorities are thus authorised to act much more effectively than their British counterparts. Although

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SOLAS Convention, Cmnd. 5647, 5648 (1974).

11. Cmnd. 5471 (1976).

12. A recent example (not in force) is the Convention Concerning Minimum Standards in Merchant Ships. See also International Labour Organisation, *Substandard Vessels, Particularly those Registered under Flags of Convenience*, Reports V(1) and V(2) (1976).

13. *The Economist* (12-18 March 1977), p. 81.

the provision is of questionable legality it is suggested that this only reflects the global trend to increased coastal State jurisdiction over foreign vessels thought to pose pollution danger.[14] It is the writer's view that British authorities would be likely to act when there is "imminent danger of a marine casualty" even without express authority to do so and, consequently, that there is no practical difference between the British and Norwegian law concerned with intervention with foreign vessels on the high seas.

5. Control of debris dumping from installations and vessels

a) United Kingdom

Dumping of debris, drilling mud, etc. from installations and vessels is not included within the Dumping at Sea Act 1974 if it is "incidental" to normal operations. However, the Oslo Commission Draft Resolution has provided a framework for States Parties to consider certain offshore petroleum development activities as an integral part of normal operations and therefore within its scope. The U.K. will implement this Draft Resolution under the Dumping at Sea Act 1974, which is of wide enough scope to accommodate this interpretation without amendment. It will also be recalled that Model Clauses contained in licences authorising offshore petroleum development contain specific requirements relating to the control of activities which could cause marine pollution, as well as the general provision that the licensee observe "good oilfield practice" in carrying on operations.

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14. The U.K. Voluntary application of the 1969 IMCO Amendments to its vessels is another example of an act by a North Sea State likely to hasten the development of the international law of marine pollution control.

Control of debris dumping from supply vessels is particularly difficult. The U.K. approach has been to work through the offshore operator to make personnel aware of the consequences of such disposal. The efforts of the Fisheries and Offshore Oil Consultative Group to resolve this problem is an approach which merits watching. It may well be that negotiation and compromise among the competing users of the North Sea is a better approach than the imposition of a legal framework.

b) Norway

The control of debris dumping in the Norwegian sector is approached in a manner similar to that employed in the British sector. The Norwegian Petroleum Directorate has made it clear to offshore operators that debris dumping is illegal and that they may be prosecuted for offences. However, despite enacted and proposed laws to facilitate enforcement (for example, it is required that supply vessel cargo be marked; it is proposed that supply vessels and/or loading and receiving points be required to maintain a cargo record book), it is recognised that education of offshore workers may be the best approach.

c) conclusion

The major difference between the U.K. and Norwegian approaches to debris dumping control is the existence of the Fisheries and Offshore Oil Consultative Group which is concerned with damage caused in the U.K. sector. Norway also has a compensation scheme, but it is administered and funded by the Norwegian Ministry of Fisheries. It is suggested that, as the cost of compensation (including administration expense) ought to be borne by those responsible for damage, and

as the competing users of the area ought to be provided a forum for the resolution of their differences, the U.K. approach offers greater promise of success.

6. Compensation for damage caused by petroleum development

The compensation schemes set out in Table V-1 on pages 252-253 apply, with the exception of the Fisheries and Offshore Oil Consultative Group, to both the U.K. and Norway. It will be observed that there is no provision for compensation for damage caused by petroleum products and dangerous chemicals. This is a significant deficiency which ought to be corrected.

7. Assessment of the present legal regime

Both the U.K. and Norway are making *bona fide* efforts to protect the North Sea from pollution caused by petroleum development and, in the writer's view, there are no substantial reasons to prefer one system over the other. Nevertheless, the present legal regime which results from the two systems could and should be improved upon. The major weaknesses of the North Sea regime *lex lata* are in part the consequence of the present international law of the sea and in part caused by unplanned evolution.

a) diversity of installation standards

The independent development of standards for offshore installations has resulted in a certain amount of diversity. Lack of uniform standards in regard to construction of production platforms is not as important as it is in the case of mobile platforms which may become subject to various jurisdictions. Nevertheless, from the point of view of pollution control, it is important that some agreement be reached on permissible operational discharges, for oil and other

pollutants may also cross jurisdictional boundaries. The writer has been assured by Government officials that differing standards have not caused problems in the Frigg complex which straddles the U.K. - Norwegian boundary line. It is thought, however, that a gradual adoption of uniform standards in such fields would make inspection and detection of safety and pollution problems both cheaper and more accurate.

b) enforcement problems

The major enforcement problems are, 1) control of foreign flag vessels for the purpose of pollution prevention and, 2) the cost of offshore patrolling. Both are likely to be resolved in time by the evolution of international law and technology, but it is questionable whether North Sea protection can wait.

c) the need for scientific data

Science must answer the question of necessary environmental protection. Although ICES, NATO, the EEC and other bodies have been active in investigating the causes and effects of North Sea pollution, much additional work is needed. It is an unfortunate consequence of fragmented North Sea continental shelf jurisdiction that no central organisation is responsible for providing information upon which management decisions of a superior authority would be based.

d) the need for coordination

Coordination of the many departments within each Government as well as at the inter-Governmental level remains a formidable task. Mrs. Elizabeth Young has written a number of papers concerned with the need for U.K. reorganisation in order to permit efficient use of British oceanic resources. Certainly this need was made evident to

the writer during research for this thesis--and not only in the U.K. As has been mentioned earlier, a substantial reorganisation and reassignment of responsibility and authority for marine pollution control occurred in the Norwegian Government in 1976. At the very minimum a standing committee is necessary to consider problems of North Sea use on both the national and regional levels. The North Sea is an invaluable asset that should be managed--not squandered by *ad hoc* individual decisions.

C. A Model Legal Regime for the United Kingdom and Norwegian Sectors

The primary recommendation in this section is that existing conventions be adopted and that the U.K. and Norway cooperate in enforcing the standards thus agreed upon. Particular emphasis is placed on the prevention of pollution from vessel accidents, the most likely source of a major oil spill, and the control of chemicals and other hazardous substances. See Table X-2 on the following pages.

1. Control of operational discharges from installations

It is proposed that, pending a multilateral agreement, the U.K. and Norway informally agree to cooperate in investigating the standards necessary to protect the marine environment from chronic discharges of oil and other substances from offshore installations, and to improve the technology available to control such discharges. A standing committee composed of representatives from both States could profitably discuss the control of operational discharges from platforms, exchanging ideas and information, and agree on compatible (and to the extent practicable, uniform) standards and procedures. An initial task would be to promote additional research into the problem

TABLE X-2

A MODEL LEGAL REGIME FOR POLLUTION CONTROL IN THE U.K. AND NORWEGIAN SECTORS

Pollution Source	Instrument	Standard	Enforcement	Remarks
installations: operational discharges	informal agreement	best practicable	reciprocal inspection	pending Convention
installations: accidental discharges	informal agreement	best practicable	reciprocal inspection	pending Convention
vessels: operational discharges	1973 IMCO/ bilateral agreement	1973 IMCO	reciprocal *inter se*	accept 1973 IMCO *inter se*
	informal agreement	application of 1973 IMCO to own military vessels	flag State	
vessels: accidental discharges	Intervention Convention	Intervention Convention		agree to permit intervention when maritime casualty imminent
	Intervention Protocol	Intervention Protocol		accept *inter se* pending coming into force
vessel/installation collisions	bilateral agreement	bilateral agreement		pending Convention

Pollution Source	Instrument	Standard	Enforcement	Remarks
debris dumping	Oslo Convention/ bilateral agreement	Oslo Convention/ bilateral agreement	reciprocal *inter se*	

of oily water separation.[15] It is suggested that, as the objectives of standardisation and reciprocal inspection are compatible with the Frigg Agreement, the Frigg Field Consultative Commission could be entrusted with additional responsibility. The Commission could also be made responsible for the new Statfjord and additional fields which may be developed jointly, an alternative preferable to the creation of new Commissions for each new shared field. Increased responsibility would make it possible that the present Commission expand from its current representation of three persons from each Government. Meetings would still be "from time to time" unless it became apparent that a definite schedule was required, but a permanent Secretariat ought to be established in order to facilitate communication.

2. Control of accidental discharges from installations

It is suggested that the Commission proposed above also be given authority and responsibility to coordinate efforts to prevent and control pollution caused by accidents to installations. The Commission could prove to be of particular value in coordinating activities of the two States if the forthcoming Conference on Safety and Pollution Safeguards should conclude a Convention.

3. Control of operational discharges from vessels

It is proposed that the U.K. and Norway enact enabling legislation permitting ratification of the 1973 IMCO Convention. The Convention ought to be made applicable to U.K. and Norwegian vessels (to

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15. Although considerable research into the problems of oily water separation is already occurring, it is generally admitted by those concerned that much additional work is needed. See, Heriot-Watt University, Institute of Offshore Engineering, *The Separation of Oil from Water for North Sea Operations*, the Collected Papers of a seminar held in Edinburgh, 22 and 23 June 1976.

the extent technologically practicable) as soon as possible, regardless of the likelihood that the Convention will not be in force for some years. The U.K. or Norwegian law implementing the 1973 IMCO Convention should be made applicable to foreign flag vessels engaged in petroleum development activities by requiring that the licensee only contract with vessel owners who agree to be bound by it. U.K. and Norwegian shipping interests are likely to protest that such action would invite retaliation by other States. In the writer's view, retaliation against British and Norwegian vessels by the imposition of similar requirements is likely to affect few British or Norwegian interests, and if done for the same reasons may in fact be welcome. Retaliation by America or Liberia against the British or Norwegian merchant fleet is unlikely indeed. The Convention ought also to be applied to military and other Government vessels of the two States.

It is proposed that the two Governments agree to a scheme of reciprocal enforcement of the 1973 IMCO Convention. Each State would be given the same rights of inspection and enforcement that it exercised in respect of its own vessels. Such an agreement is absolutely dependent on the mutual *bona fides* of the two States; it is submitted that no problem is likely to arise in this regard and that the agreement could provide for prosecution by either State at the option of the flag (or controlling) State with little likelihood that the scheme would be abused.

Finally, it should again be observed that the provision of adequate reception facilities to receive wastes is absolutely essential to the operation of the Convention. It is recommended that the two Governments coordinate their assessment of and planning for this need.

4. Control of accidental discharges from vessels

a) Intervention Convention

It is suggested that the two Governments agree to permit intervention with each other's vessels under the Intervention Convention when a maritime casualty is *imminent* rather than, as under the Convention, a *fait accompli*. This could be applied to foreign flag vessels working in the U.K. and Norwegian sectors through the licensee. As there would be no attempt to interfere with foreign flag vessels on the high seas without their consent, this proposal is entirely consistent with international law.

b) Intervention Protocol

It is proposed that the U.K. and Norwegian Governments enact legislation to enable acceptance of the Protocol relating to Intervention on the High Seas in Cases of Marine Pollution by Substances other than Oil, 1973. The Protocol should be accepted *inter se* even before it comes into force.

5. Control of vessel/installation collisions

At present the right to interfere with a foreign flag vessel likely to collide with an installation is unclear. It is suggested that, pending agreement on an IMCO Convention on Wreck Removal and Related Issues which sets out the rights and duties of Parties in such cases, the U.K. and Norwegian Governments agree bilaterally to permit such intervention with each other's vessels (including foreign flag vessels working for licensees). The Agreement could be modelled on the Intervention Convention as amended *inter se*. It is thought that the conclusion of such an agreement would also prove useful in forcing the two Governments to formalise the issues involved in such

cases, and to agree on general guidelines for dealing with vessel/rig collision situations and could well promote the conclusion of an international convention containing similar provisions.

6. Control of dumping

In the writer's view, the Oslo and London Dumping Conventions to which both States are Parties are generally satisfactory instruments for the control of dumping in the North Sea. It is suggested that, pending agreement of other Oslo Convention members, the U.K. and Norwegian Governments agree bilaterally to a scheme of reciprocal enforcement. This proposal is particularly directed to control of dumping from pipelaying barges, supply vessels, etc. The suggested reciprocal enforcement scheme would be similar to that proposed to control vessel-source pollution, although it is thought that provision of separate instruments embodying such agreement would result in a system more amenable to change.

7. Compensation for damage caused by petroleum development

a) installations: crude oil damage and clean-up costs

It is thought that the Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration for and Exploitation of Seabed Mineral Resources represents the most effective compensation scheme on which the U.K. and Norwegian Governments are presently prepared to agree. Consequently, no suggestions for increased protection for victims of damage caused by crude oil discharged from installations or pipelines will be made other than recommending that it be adopted *inter se* pending its coming into force and that the Parties undertake to review the Convention in the light of experience with it in order to improve protection where necessary. The 1976 Convention

is used as a model for suggested bilateral agreements. (See Table X-3 on the following page.)

b) installations: other petroleum products and chemicals

It is proposed that the U.K. and Norway conclude a formal bilateral agreement relating to compensation for damage and clean-up costs (including preventive measures) caused by the discharge of petroleum products other than crude oil and chemicals from installations and pipelines. At the present time there is no statutory compensation scheme (and no private agreement) to compensate victims of such damage. It is conceded that at present the need for the proposed agreement is not great: as there is no offshore refining or petro-chemical industry, discharges of petroleum products and chemicals are likely to be of comparatively minor significance (for example, petrol spills and mud dumping). However, as has been pointed out earlier, ambitious plans for basing a petro-chemical industry on North Sea oil are underway, and it is not inconceivable that disused production platforms will complement other artificial islands used for a variety of purposes which could involve a high risk of hydrocarbon or chemical discharge. It is evident that some provision to compensate persons injured by such activities will be necessary.

The licensee *and* the operator of the installation or pipeline would be jointly and severally liable for damage and clean-up costs (including preventive measures).[16] Strict liability with the usual exceptions is proposed, it not being thought likely that absolute

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16. It is thought that the imposition of joint and several liability would help ensure that the licensee was careful in the selection of his operator and that the operator was careful in the manner in which he conducted operations.

TABLE X-3

A MODEL LEGAL REGIME FOR POLLUTION DAMAGE AND CLEAN UP IN THE U.K. AND NORWEGIAN SECTORS

Damage Compensated	Instrument	Liability Type	Liability Limits	Remarks
installations and pipelines *crude oil* damage and clean up costs	1976 Civil Convention	strict, on operator	30 million SDRs rising to 40 million SDRs in 5 years	accept *inter se* pending coming into into force
other petroleum products and *chemicals* damage and clean costs	proposed bilateral agreement	strict, on licensee and operator	30 million SDRs, rising to 40 million SDRs in 5 years	includes a fund constituted from transfer fees
tankers *persistent oil* damage and clean up costs	1969 Civil Convention	strict, on owner	$134/ton of adjusted net tonnage or $14 million	
certain *persistent oil* damage and clean up costs not covered by the Civil Convention	1971 Fund Convention	strict, on cargo receiver	$30 million per incident	accept *inter se* pending coming into force
other petroleum products and *chemicals* damage and clean up costs	proposed bilateral agreement	strict, on vessel and cargo owners	30 million SDRs, rising to 40 million SDRs in 5 years	includes a fund constituted from transfer fees
dumping from vessels and installations *debris* damage and clean up costs	Consultative Group	committee discretion, with right of appeal	none	expansion to Norwegian sector; includes damage to any person from seabed debris

liability would be acceptable to the Parties. Liability limits would be identical with those of the 1976 Convention.

It is proposed that a fund be established which would be available for the purpose of compensating victims *and* also finance research and development of pollution control techniques. The fund would be constituted by the levy of a .05 SDR fee on each barrel of petroleum product or chemical transferred to or from an offshore installation or transported by submarine pipeline. The fee collection would continue until the maximum liability limit was reached. It is recognised that the fund is likely to have a zero balance for several years, until taxable activity occurs. It is the writer's view that this is of little consequence. It is desirable to have regulatory machinery available *before* such activity commences and the absence of funds only reflects the absence of risk for which the proposed agreement would be constituted.[17]

It is not thought likely that the Parties would consent to an arrangement whereby persons could claim compensation for damage to the environment or even for loss of earnings in the total amount estimated to have been lost. However, it is suggested that the U.K. and Norway may accept an arrangement whereby a person who can prove that he derives at least 50 per cent. of his earnings from activities which utilise oceanic resources *regardless of whether or not such resources are his property* could claim compensation. This scheme is proposed,

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17. Foreknowledge of pollution prevention provisions will enable the entrepreneur to base pricing decisions on a more realistic projection of costs. It is thought that planning for such costs rather than imposing them *ex post facto* is a more promising approach to North Sea management.

in slightly varying forms, in a number of Bills currently being considered by the U.S. Congress and is likely (in the turbulent wake of the *Argo Merchant, et al.* incidents) to become law in the near future.[18]

c) tankers: persistent oil damage and clean-up costs

It is proposed that the 1969 Civil Liability Convention be augmented by the 1971 Fund Convention accepted *inter se*. This would not appear to pose significant problems as both Governments have already ratified the Fund, thus indicating their willingness to be bound by its provisions. The Fund Convention would thus replace CRISTAL insofar as U.K. and Norwegian cargo receivers are concerned.

d) tankers: other petroleum products and chemicals

It is suggested that a bilateral agreement similar to that proposed in respect of installations and pipelines be concluded to compensate the victims of damage caused by petroleum products and chemicals. This agreement is needed immediately, for vessel transportation of such substances in the North Sea occurs daily. The conclusion of a bilateral agreement may exert some pressure on IMCO to hasten adoption of a multilateral convention on the same subject (which is now under consideration), and could prove helpful in influencing the inclusion of adequate compensation provisions in such an instrument as well.

e) dumping from vessels and installations

i) debris damage and clean-up costs

It is proposed that the Fisheries and Offshore Oil Consultative

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18. See footnote 3, at p. 521.

Group be extended to the Norwegian Sector and that compensation be available for *any* person who can prove that he has suffered damage from oil-related debris. It is recognised that the Governments can only ask that the operators (who have already extended the OPOL Agreement to all but one North Sea sector) take the recommended action. Nevertheless, it is thought to be in the interests of all concerned that the present arrangement be expanded rather than to approach the problem through the more formal legal machinery of bi-lateral agreement. It is of the utmost importance that the competing users of the North Sea communicate with one another both in the prevention and the resolution of conflict. It is submitted that, under the "polluter pays principle," offshore operators associations ought to pay for the damage their members cause by unpermitted debris dumping. If the suggested arrangement does not work in practice, it is always open to the Governments to assume the burden of providing a more formal procedure for resolving this North Sea user conflict.

ii) damage and clean-up costs resulting from other substances

It is suggested that consideration be given to charging fees for dumping permits and placing the proceeds in a fund to be used for compensation and research into the effects of dumping on the marine environment. At the present time this suggestion may be unnecessary. Little licensed dumping occurs in the North Sea, and a fund would be limited accordingly. Moreover, it is arguable that the imposition of fees for permitted dumping would only exacerbate the problem of illegal disposal at sea.[19] In consequence, it is proposed only that

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19. The present fee for a dumping permit in the U.K. is 45 pence. Imposition of much higher fees would achieve the desired result

should future evidence indicate that the cost of ocean dumping to the environment and to other users of the sea has become significant, those who benefit from such waste disposal (whether an individual or society) ought to pay something for an activity that can in no sense be considered "free."

D. A Model Legal Regime for the North Sea

The second step towards improved control of pollution in the North Sea is to expand the scope of coverage beyond the U.K. and Norwegian sectors to include the entire semi-enclosed sea. There is also a significant change in emphasis: whereas in the model legal regime for the United Kingdom and Norwegian sectors coordination was the primary concern, the expanded regime is intended to *manage* the North Sea with respect to pollution control (and, perhaps in the future, with respect to the total use of that natural asset). It is suggested that an organisation for North Sea management will be necessary for the proposed model legal regime to succeed.

1. An organisation for North Sea pollution control management

The proposed organisation could be established expressly to achieve North Sea management objectives or an existing organisation could be adapted. It is suggested that an additional organisation is unnecessary; there are a number of existing international organisations which could be tailored to coordinate the control of North Sea pollution. A short list of candidate organisations would include the United Nations Environment Programme (UNEP), IMCO, the EEC, NATO and

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only if enforcement were effective and the penalty for an offence was severe enough to coerce compliance.

the Oslo Commission. It is suggested that the Oslo Commission is the most satisfactory candidate.

a) UNEP

The UNEP, although concerned with the precise problem for which an organisation is needed and responsible in part for regional schemes in other areas, is an unsatisfactory choice because: 1) it is so poorly funded at present that it has been urged to limit its tasks, 2) UNEP headquarters in Nairobi are geographically remote from the North Sea, and 3) as a U.N. Organisation, the UNEP is subject to political pressures greater in both kind and degree from those likely to characterise a purely regional grouping of North Sea or North Atlantic States.

b) IMCO

IMCO is a strong candidate, for although it is primarily concerned with vessels, its frame of reference is actually maritime matters. It would therefore be quite consistent with IMCO's remit to vest responsibility for control of pollution from both mobile and fixed installations in that organisation. On the other hand, the Council and the Maritime Safety Committee (IMCO's principal operating organs) are controlled by maritime interests.[20] Moreover, the organisation is large, representing diverse interests on a global scale.

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20. The Council consists of 18 members, 6 from States with the largest shipping interests, 6 from States with the largest maritime trading interests, and 6 from States with special interests in maritime transport or navigation. The MSC is composed of 16 members of which 8 are from the 10 largest ship-owning States, and the remainder from States with an important interest in maritime safety. As all recommendations of the MSC must be submitted to the Assembly through the Council, such measures must negotiate two potentially biased organs. Even MEPC proposals must be submitted to the Assembly through the Council. See

c) EEC

The EEC appears to be an ideal organisation to manage the North Sea.[21] It has certain supranational powers and all North Sea States except Norway are bound formally by the Treaty of Rome. The EEC has considerable experience and resources which could be applied to North Sea management problems. Nevertheless, the writer considers that the disadvantages of EEC North Sea management would, at least initially, outweigh the advantages.

A number of points may be made in this regard. Most importantly, Norwegian rejection of EEC membership means that one of the two sectors in which most of the petroleum development is presently occurring is not subject to Community policies and decisions. Although Norway and the EEC could agree that the former would be bound by Community actions in respect of pollution control--but in no other way, such a limitation would remove any advantage that the EEC enjoyed over the Oslo Convention Commission. Moreover, the Norwegian attitude toward implementing EEC policies which are intended to be consistent with the Community's best interests is likely to be less than sympathetic.[22]

Hallman, R., *Towards an Environmentally Sound Law of the Sea*, A Report of the International Institute for Environment and Development, London (1974), at pp. 48-49.

21. "The future of European law of the sea lies with the Common Market which can make an important contribution to European maritime order and provide a model of regional co-operation for other areas of the globe." Janis, M., "The Development of European Regional Law of the Sea," 1 *Ocean Development and International Law* 275-289 (1973-1974), at p. 275.

22. The tendency of EEC States to oppose a common plan when individual interests are thought to be threatened has been illustrated on many occasions, for example the U.K. and Irish views on fishing policy and the former State's attitude to EEC effluent discharge standards.

The formal structure and economic objectives of the EEC may inhibit its performance. It is sometimes easier to agree in looser political groupings simply because they *are* looser in character.[23] Furthermore, many observers think that the present tendency of EEC policies to fragment into national self-interest will increase dramatically if such States as Greece, Turkey and Spain are admitted. A larger EEC would be less relevant to the North Sea, more concerned with its own internal problems, and more bureaucratic than it is at present.

Finally, it should be observed that the EEC is first of all an *economic* organisation. The primacy of this objective might well cause any compromise between economic and environmental objectives to be heavily weighted in favour of the former.

d) NATO

Although all the North Sea States are Parties to NATO, it is suggested that this Organization would be an unsatisfactory choice because of its military objectives. Cooperation with other States or regional groupings could be difficult and a possible merging of North Sea and Baltic Sea regimes would be made quite improbable. Moreover, it is unnecessarily large and geographically dispersed. NATO may prove to be a useful organisation to assist in the enforcement of North Sea pollution control standards because it has considerable resources and expertise in surveillance, but even in this limited capacity it would be necessary to determine that the price of enforcement was not cooperation with other States.

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23. Hardy, M., *op. cit.* in footnote 8, at p. 339.

e) The Bonn Agreement

The establishment of a Commission within the Bonn Agreement could result in an organisation well suited to North Sea management. However, the broad scope of this task would require that the new Commission assume certain authority to control North Sea pollution from ocean dumping, a task for which the Oslo Commission is presently responsible. One organisation ought to be clearly responsible for North Sea management. It is suggested that the Oslo Commission could easily assume duties which might be assigned to a new Bonn Commission, whereas the reverse could raise problems in respect of non-North Sea Oslo Convention States.[24]

f) The Oslo Convention

It is suggested that the States Parties to the Oslo Dumping Convention expand its terms of reference to include coordination of measures to prevent pollution from operational and accidental discharges from installations and vessels in the Oslo Convention area. This proposal would require that the Convention be amended. It is suggested that, although the Convention can be amended by a two-thirds vote of the Parties,[25] the requirement that the amended Convention be vigorously implemented by all Members requires unanimity in this case.

The Oslo Convention offers a number of advantages as an organisation for the coordination of pollution control in the North Sea. It

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24. It will be recalled that the Oslo Convention area is somewhat larger than the North Sea. It is essentially a Northeast Atlantic area, extending to the seas adjacent to Convention Members Finland, Sweden, Ireland, Iceland, Spain and Portugal as well as the North Sea.

25. Oslo Convention, Article 5.

is an existing regional Convention, including all the North Sea States,[26] plus others in the Northeastern Atlantic area. It has a permanent Commission, thus facilitating Convention management.[27] Finally, it should be noted that it has been resolved that the Commissions of the Oslo and Paris Conventions should consist of the same representatives, that their meetings should be combined, and that a common secretariat should be established.[28] The new Commission would therefore be an organisation already concerned with the coordination of land-based sources of marine pollution and ocean dumping to which can be assigned additional responsibilities in respect of a regional scheme of pollution control.

2. Organisation of the expanded Oslo Commission

The organisation indicated by the suggested areas of concentration described below would require the creation of a permanent full-time secretariat. It may be that the suggested duties require expansion of the present Commission. Certainly, additional staff would be necessary to provide Commission Members with the necessary information upon which to base management decisions.

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26. Belgium and the Federal Republic of Germany are not yet members, but have implemented the Convention on a voluntary basis and are expected to ratify the Agreement in the near future. Conversation with Mr. G.F. Buxton, Secretary to Oslo Commission, 28 March 1977.

27. The Commission's Draft Resolution which would include debris from offshore petroleum development as "dumping" illustrates the value of a standing authority competent to adapt a scheme to changing needs.

28. Oslo Commission, *First Annual Report* (November 1975), pp. 10-11.

3. Suggested areas of concentration

a) promotion of scientific inquiry and technological development

The Commission should assign high priority to the promotion of scientific inquiry and technological development by the several States. It is not thought that the North Sea States would accept a proposal that the Commission solicit bids for research or support specific projects with monies accumulated in proposed Convention Funds. In consequence, the Commission's role would be limited to that of coordinator and advocate. Should the proposed Conventions be accepted, individual States would retain custody of Fund monies.

b) coordination and expansion of existing pollution prevention conventions

Another very important task for early consideration is that of coordination of existing conventions relevant to North Sea pollution control. It is thought that, although it would be desirable to replace the present patchwork of pollution control conventions with a comprehensive "umbrella" convention for the control of all North Sea pollution, this is not a realistic proposal. It is therefore suggested that Oslo Convention States be urged to ratify existing conventions and that those instruments be strengthened by regional agreement where necessary. (See Table X-4 on the following page for a tabulation of North Sea State acceptance of existing conventions, and Table X-5 on pages 565-566 for a summary of the proposed model legal regime for pollution control in the North Sea.)

i) installations: operational discharges

It is proposed that the Commission recommend to member States that the Paris Convention be interpreted to include offshore petroleum

TABLE X-4

NORTH SEA STATE ACCEPTANCE OF CERTAIN INTERNATIONAL CONVENTIONS

Convention	Bel.	Den.	Fra.	Ger.	Neth.	Nor.	U.K.
Continental Shelf		x	x		x	x	x
Oslo Dumping		x	x		x	x	x
1973 IMCO*							
Paris*		x	x				
1954 IMCO (1962 Amendments)	x	x	x	x	x	x	x
1969 IMCO Amendments*	x	x	x		x	x	x
1971 IMCO Amendments (Tanks)*						x	x
Intervention	x	x	x	x	x	x	x
Intervention Protocol*							
London Dumping		x				x	x
Bonn Agreement	x	x	x	x	x	x	x
1976 Civil Liability*							
1969 Civil Liability		x	x	x	x	x	x
1971 Fund*		x		x		x	x

*Not in force
Note: acceptance as of February 1977.

TABLE X-5

A MODEL LEGAL REGIME FOR POLLUTION CONTROL IN THE NORTH SEA

Pollution Source	Instrument	Standard	Enforcement	Remarks
installations: operational discharges	Paris Convention	best practicable	reciprocal	Paris Convention interpreted to include offshore installations
installations: accidental discharges	new convention	best practicable	reciprocal	a suggested objective for the Conference on Safety and Pollution Safeguards
vessels: operational discharges	1973 IMCO Convention	1973 IMCO Convention	reciprocal *inter se*	acceptance of 1973 IMCO Convention among North Sea States pending its coming into force
vessels: accidental discharges	Intervention Convention	Intervention Convention		agree to permit intervention when maritime casualty imminent
	Intervention Protocol	Intervention Protocol		accept *inter se* pending coming into force
vessel/installation collisions	new convention	based on Intervention Convention		a suggested regional convention pending the coming into force of an acceptable IMCO Convention

Pollution Source	Instrument	Standard	Enforcement	Remarks
vessels or installations	Bonn Agreement	coordination		Oslo Commission to assume administrative responsibility; amend to facilitate cooperation
debris dumping	Oslo Convention	Oslo Convention	reciprocal	requires establishment of reciprocal enforcement machinery

development installations within the definition of "man-made structures." This proposal, if accepted, would allow the Commission to agree upon standards for operational discharges from platforms. It is thought that there is little that can realistically be done to improve on the "best practicable" effluent discharge standard discussed above until improvements in technology permit more specific requirements. Even then, it may be that the peculiar characteristics of individual installations (for example, placement, age) preclude specific discharge standards.

It is proposed that provision be made for reciprocal inspection although, as indicated in connection with the discussion concerning the United Kingdom-Norway proposed legal regime, it is thought that this will be of practical importance only in common fields.

ii) vessels: operational discharges

It is recommended that the Commission urge the Governments of States Parties to enact legislation permitting voluntary application of the 1973 IMCO Convention to the vessels of member States, and that Members ratify the Convention as soon as possible.[29] Members should agree to use "the best practicable technology" in cases (such as that of oily water separators for "white oils") in which compliance with specific discharge standards is not yet "practicable." It would be a task of the Commission to determine what was "practicable," considering

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29. The Commission should also support the Carter Administration's recommendation to Congress that the 1973 IMCO Convention be ratified by the U.S. U.S. ratification would not only provide another State with a substantial merchant fleet which would assist progress towards entry into force, but could contribute toward a general "groundswell" of State acceptance. See President Carter's Message to Congress, 18 March 1977.

various factors. It should be required that whenever a "best practicable" standard is used it be subject to annual review by the Commission so that it does not become permanent. Consideration should be given to obtaining observer status at IMCO and to the establishment of a joint committee with IMCO concerned with the improved control of vessel-source pollution.

The vexed problem of enforcement could be minimised if the States Parties to the Oslo Convention so agreed. It is recommended that an attempt be made to conclude an agreement among the Parties to submit to reciprocal inspection and enforcement of the 1973 IMCO Convention, as well as other schemes intended to control pollution from vessels. Each State should have the rights of inspection and prosecution in respect of the non-Governmental vessels of other Oslo Convention States that it has in respect of its own vessels. In theory, this would mean that vessels could be boarded on the high seas, and this might indeed happen occasionally. In practice, there is little enforcement done at sea for the reason that it is too expensive. As a practical matter, most inspection would occur in port.

The agreement should provide for prosecution either by the inspecting State or the flag State, *at the option of the flag State.* It is thought that this compromise would be necessary in order to gain the necessary acceptance for the scheme among Member States. Although this arrangement is subject to abuse, it is not thought likely that this will occur. North Sea States have a common interest in preservation of a small semi-enclosed sea and in mutual good relations. The problem of securing agreement is thought to be far greater than that of ensuring good faith compliance with an agreement that has been accepted.

It is recognised that agreement among North Sea States to control vessel-source pollution omits consideration of foreign flag vessels from other States. Foreign vessels engaged in work on the North Sea continental shelf could be regulated through the concession licensee. The regulation of vessels merely navigating through the North Sea, whether to North Sea State ports or otherwise, should be attempted by informal and formal bilateral agreement pending control by multilateral convention.

iii) vessels: accidental discharges

It is suggested that the Oslo Commission recommend to Member States (all of which have accepted the Intervention Convention) that they agree to an amendment of the Intervention Convention *inter se* to permit intervention when a maritime casualty is imminent. It is thought that there should be no objection in principle to this proposal which would only formalise what, in the writer's view, States would be likely to do anyway. It is also of importance that North Sea States accept the Intervention Protocol (permitting intervention when non-oil substances threaten pollution damage) *inter se*, as North Sea petro-chemical complex proliferation is likely to precede Protocol effectiveness.

iv) vessels and installations: dumping

The Commission should seek to implement reciprocal enforcement procedures under the Oslo Convention to control ocean dumping from vessels and installations. In essence, this proposal envisages a scheme to assist States with the enormously difficult task of controlling "convenience disposal," a term meant to describe dumping of wastes produced in the North Sea area and disposed of at sea not because they are particularly toxic or dangerous, but because it is the

easy way to get rid of them. State vessels on constabulary duty (for example, fisheries protection) should be authorised to stop non-Government vessels of member States on the high seas when there is reason to believe that the vessel has dumped illegally or intends to do so. Evidence of an actual or intended offence should be turned over to the flag State (or the State which has issued a petroleum licence for an area of the continental shelf in which the vessel is employed, if it is a foreign flag vessel) which should be under a duty to investigate and prosecute the alleged offender under its national laws.

v) cooperation in pollution abatement

The Commission should administer the Bonn Agreement for Cooperation in dealing with Pollution of the North Sea by Oil. This Agreement should be amended in order to make zones of responsibility conform with sectors of the continental shelf. Furthermore, the Commission should encourage member States to coordinate and intensify their research and development of equipment and procedures for pollution abatement. For example, while the U.K. favours the immediate use of dispersants to prevent slicks from threatening coastlines or other related interests, the Norwegian policy is to resort to this technique only if mechanical clean-up devices cannot be used. Research is needed to determine precisely what the short and long term effects of dispersants are on a variety of marine organisms in conditions which faithfully reflect those which would be likely to be encountered in practice. This effort should be supplemented by investigations into technologically advanced mechanical devices for pollution abatement. More extensive information is necessary to provide the basis

for a common policy to combat possible oil spills and other discharges. The Commission should help members to agree on shared equipment procurement and employment procedures. For example, it has been observed by an expert on the subject that available equipment is inadequate to extinguish a possible production platform fire which, in consequence, might have to be left to burn for a year or more while the necessary equipment was constructed.[30] It is conceded that one cannot insure against every possible risk; however, pooling of knowledge and resources (perhaps in relation to number of wells drilled, producing, or some other factor indicating risk-creation) is a common-sense answer to what must be admitted to be a common problem.

c) proposed pollution prevention conventions

i) installations: accidental discharges

It is recommended that the Oslo Commission urge Member States to continue the work of the 1973 Conference on Pollution Safeguards, again with a view towards the early conclusion of a Convention to control accidental discharges from installations. The new Convention should embody standards and procedures determined by the States Parties in consultation with interested organisations (such as the Oil Companies Exploration and Production Forum, the U.K.O.O.A., and fishing and environmental groups) and with reference to any existing internationally-agreed standards. Uniform standards should be adopted insofar as they facilitate common inspection, enforcement, and compliance, but the peculiar needs of the North Sea (or a location

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30. Comments of Red Adair, expert oil fire fighter on "The Energy File," a BBC 1 television presentation, 6 April 1977, at 10:45 p.m.

therein) should not be sacrificed merely to achieve uniformity. Although it is true that a convention intended to promote installation safety also indirectly promotes pollution prevention, it is suggested that the very term "safety" be defined in the proposed Convention to include "environmental safety." This definition is intended to minimise the possibility that some standards and practices which may cause marine pollution but are otherwise safe (in the sense of risk to life or investment) may be accepted.

ii) vessel/installation collisions

It is recommended that pending the coming into force of the proposed IMCO Convention on Wreck Removal and Related Issues, the States Parties to the Oslo Convention agree to extend the Intervention Convention to cases in which one of their vessels threatens to collide with an offshore installation. While there may be grounds for suggesting that Parties which do not have significant numbers of offshore installations or are not located near areas of offshore activity (for example, Iceland) may be reluctant to agree to such a scheme, it is thought that the safeguards incorporated in the Intervention Convention as well as the greater degree of trust possible among a small group of States with generally similar interests would minimise this potential obstacle. Even should such States not agree, the essential purpose of the proposal could be fulfilled among the remaining States.

d) coordination and expansion of existing compensation schemes

i) installations: crude oil damage and clean-up costs

Member States should be urged to accept the 1976 Convention on Civil Liability for Oil Pollution Damage Resulting from Exploration

for and Exploitation of Seabed Mineral Resources. Although only four acceptances are required for the Convention to become effective, it is crucial that the U.K. and Norway be numbered among the four if that instrument is to afford pollution victims protection from the most likely sources of injury. (See Table X-6 on following page.)

ii) tankers: persistent oil damage and clean-up costs

All North Sea States are bound by the 1969 Civil Liability Convention. (See Table X-4 on page 564.) The Commission should actively encourage acceptance of the Fund Convention, not only among North Sea States, but elsewhere. Unless the Fund Convention comes into force, North Sea States would have to continue dependence upon CRISTAL, accept the Fund Convention *inter se*, or draft a new convention. It is suggested that CRISTAL is inadequate and that without international acceptance the Fund Convention would be stripped of its primary attraction. It is therefore recommended that, should it appear that the Fund is not going to receive the requisite ratifications to become effective (for example, a United States decision to enact its own scheme instead of accepting the Fund), increased compensation for the victims of persistent oil carried by tankers be included in a proposed convention (discussed below) concerned with damage from other petroleum products and chemicals.

iii) vessels and installations: oil-related debris

The Fisheries and Offshore Oil Consultative Group compensation scheme, now limited to damage to U.K. fishermen in the U.K. sector, should be expanded to cover damage to any vessel caused by oil-related debris any place in the North Sea. As in the proposal to extend the scheme to Norway, the amended scheme would also include damage caused

TABLE X-6

A MODEL LEGAL REGIME FOR POLLUTION DAMAGE AND CLEAN UP IN THE NORTH SEA

Damage Compensated	Instrument	Liability Type	Liability Limits	Remarks
installations and pipelines *crude oil* damage and clean up costs	1976 Civil Convention	strict, on operator	30 million SDRs, rising to 40 million SDRs in 5 years	
other petroleum products and *chemicals* damage and clean up costs	proposed convention	strict, on licensee and operator	30 million SDRs, rising to 40 million SDRs in 5 years	includes a fund constituted from transfer fees
tankers *persistent oil* damage and clean up costs	1969 Civil Convention	strict, on owner	$134/ton of adjusted net tonnage or $14 million	
certain *persistent oil* damage and clean up costs not covered by the Civil Convention	1971 Fund Convention	strict, on cargo receiver	$30 million per incident	replaces CRISTAL
other petroleum products and *chemicals* damage and clean up costs	proposed convention	strict, on vessel and cargo owners	30 million SDRs, rising to 40 million SDRs in 5 years	includes a fund constituted from transfer fees
dumping from vessels and installations *debris* damage and clean up costs	Consultative Group	committee discretion, with right of appeal	none	expansion to North Sea; includes damage to any person from seabed debris

by oil-related subsea objects (such as abandoned well heads) unless permitted by the Controlling State. The arguments for preferring this approach over a more formal treaty arrangement are set out above in connection with the United Kingdom - Norway proposed legal regime. Expansion of the Agreement could follow the evolution of OPOL which also began its existence as a scheme which applied only to the U.K. sector. It is suggested that consideration be given to combining the two Agreements into a single instrument setting forth offshore operator liability for pollution or debris damage. It is thought that offshore operators would be receptive to this proposal if it were presented as an alternative to an inter-Governmental arrangement. It may be pointed out that in those areas of the North Sea where there is little offshore petroleum development claims are unlikely[31] and extension of the Agreement is therefore unnecessary. But this objection may be answered by the assertion that those who stand to gain by the creation of risk ought to be prepared to compensate victims of their activities. Machinery to effect this objective ought to exist *before* an injury occurs. Since no investment is required, to the extent that absence of activity in some areas of the North Sea reduces the likelihood of injury, the offshore operators likewise are unaffected.

e) proposed compensation schemes

Two bilateral agreements were proposed for the United Kingdom - Norway regime to effect new compensation schemes. It is suggested here

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31. There have been no complaints to the Oslo Commission concerning debris dumping in the North Sea south of 55°N. Conversation with Mr. G.F. Buxton, Secretary to Oslo Commission, 28 March 1977.

that these bilateral agreements be made multilateral. The essence of the proposals remains unchanged.

i) vessels and installations: other petroleum products and chemicals

It is proposed that a regional convention under the auspices of the Oslo Commission be concluded to provide compensation for damage caused by substances other than persistent oil discharged from vessels or installations. The form of the proposed Convention would be very much affected by IMCO's successes in concluding similar conventions which become accepted. If, in the view of the Commission, the 1971 Fund Convention is not likely to come into force within a time which is determined to be acceptable, it is suggested that persistent oil carried by tankers also be included in this proposal. On the other hand, should IMCO's work towards a convention concerning civil liability for substances other than oil carried by vessels prove successful and if, in the opinion of the Commission, the IMCO Convention provided satisfactory protection for potential victims, this proposal could be narrowed accordingly. In the proposed United Kingdom - Norway legal regime separate bilateral agreements were suggested in order to facilitate such possible future adjustments. In the case of multilateral agreements, however, it is thought that the duplication involved might more easily be avoided by using a single instrument, perhaps in two parts.

The proposed convention would provide compensation for damage caused by the accidental or intentional discharge of petroleum products and chemicals in the area in which a State Party exercises sovereignty or sovereign rights pursuant to international law, and to preventive measures wherever taken. It is suggested that the

definitions of non-persistent oils and chemicals used in the 1973 IMCO Convention be employed. As in the case of the proposed United Kingdom - Norway bilateral agreements, liability would be strict, and would be placed on the licensee and operator or the vessel and cargo owners, as the case may be. The same arrangements for a Fund are proposed.

E. The Future

The late 1960's and early 1970's were heady years for environmentalists. The *Torrey Canyon* incident aroused international concern, the Santa Barbara disaster confirmed the public's worst fears, and the 1972 Conference on the Human Environment promised a brighter future. The environmental euphoria is now gone, extinguished by an ailing global economy. In its place is a new awareness that *any* decision taken concerning the environment has an associated cost. As our resources are clearly finite, it is evident that their efficient utilisation is necessary if we are to fulfill our objectives. But what *are* "our" objectives?

It is not necessary to look beyond events at UNCLOS III to answer this question. Objectives vary with perceived self-interests that transcend even political boundaries. States are not likely to pay the price for environmental protection unless they think it will benefit them to do so. State determination of self-interest is a cost-benefit analysis. It is evident, therefore, that perceived self-interests of States may unnecessarily diverge because cost or benefit data upon which the analysis is based is inaccurate. Because environmental protection is particularly difficult to quantify, it is the writer's view that more complete information concerning associated costs and benefits would result in a greater harmony of State interests.

The description of the causes and effects of marine pollution and the analysis of international and national law intended to control it undertaken in this thesis confirm that an interdisciplinary approach to environmental protection is necessary. It cannot start too soon.

APPENDIX I

U.K. LAW REGULATING POLLUTION FROM SEABED SOURCES

I. Pollution from Seabed Operations
   A. The Continental Shelf Act 1964
      1. Relevant Acts extended offshore in whole or part
         a) The Submarine Telegraph Act 1885
         b) The Petroleum (Production) Act 1934
         c) The Coast Protection Act 1949
         d) The Wireless Telegraphy Act 1949
         e) The Radioactive Substances Act 1960
      2. Regulations made pursuant to the Act
         a) The Continental Shelf (Designation of Areas) Order (1964 No. 697)
         b) The Continental Shelf (Designation of Additional Areas) Order (1965 No. 1531)
         c) The Continental Shelf (Designation of Additional Areas) Order (1968 No. 891)
         d) The Continental Shelf (Jurisdiction) Order (1968 No. 892)
         e) The Continental Shelf (Designation of Additional Areas) Order (1971 No. 594)
         f) The Continental Shelf (Jurisdiction) (Amendment) Order (1971 No. 721)
         g) The Continental Shelf (Designation of Additional Areas) Order (1974 No. 1489)
         h) The Continental Shelf (Jurisdiction) (Amendment) Order (1974 No. 1490)
         i) The Continental Shelf (Jurisdiction) (Amendment) Order (1975 No. 1708)
         j) The Continental Shelf (Designation of Additional Areas) Order (1976 No. 1153)
         k) The Continental Shelf (Protection of Installations) Order (1976 No. 332)
         l) The Continental Shelf (Protection of Installations) (No. 2) Order (1976 No. 954)
         m) The Continental Shelf (Protection of Installations) (No. 3) Order (1976 No. 1308)
         n) The Continental Shelf (Protection of Installations) (No. 4) Order (1976 No. 1497)
         o) The Continental Shelf (Jurisdiction) (Amendment) Order (1976 No. 1517)
         p) The Continental Shelf (Protection of Installations) Order (1977 No. 712)
   B. The Petroleum (Production) Regulations (1976 No. 1129)
   C. The Prevention of Oil Pollution Act 1971
   D. The Mineral Workings (Offshore Installations) Act 1971
      1. The Mineral Workings (Offshore Installations) Act 1971 (Commencement) Order (1972 No. 644)

2. The Offshore Installations (Registration) Regulations (1972 No. 702)
3. The Offshore Installations (Managers) Regulations (1972 No. 703)
4. Offshore Installations (Logbooks and Registration of Death) Regulations (1972 No. 1542)
5. The Offshore Installations (Inspectors and Casualties) Regulations (1973 No. 1842)
6. The Offshore Installations (Construction and Survey) Regulations (1974 No. 289)
7. The Offshore Installations (Public Inquiries) Regulations (1974 No. 338)
8. The Offshore Installations (Diving Operations) Regulations (1974 No. 1229)
9. The Offshore Installations (Operational Safety, Health and Welfare) Regulations (1976 No. 1019)
10. The Offshore Installations (Emergency Procedures) Regulations (1976 No. 1542)

E. The Petroleum and Submarine Pipelines Act 1975
1. The Petroleum and Submarine Pipelines Act 1975 (Commencement) Order (1975 No. 2120)
2. The Submarine Pipelines (Diving Operations) Regulations (1976 No. 923)

II. Pollution from Tankers and Support Vessels

A. The Prevention of Oil Pollution Act 1971
1. The Oil in Navigable Waters (Ships' Equipment) (No. 1) Regulations (1956 No. 1423)
2. The Oil in Navigable Waters (Transfer Records) Regulations (1957 No. 358)
3. The Oil in Navigable Waters (Ships' Equipment) Regulations (1957 No. 1424)
4. The Oil in Navigable Waters (Enforcement of Convention) Order (1958 No. 1526)
5. The Oil in Navigable Waters (Heavy Diesel Oil) Regulations (1967 No. 710)
6. The Oil in Navigable Waters (Shipping Casualties) Order (1971 No. 1736)
7. The Oil in Navigable Waters (Exceptions) Regulations (1972 No. 1928)
8. The Oil in Navigable Waters (Records) Regulations (1972 No. 1929)
9. The Prevention of Oil Pollution Act 1971 (Commencement) Order (1973 No. 203)

B. The Merchant Shipping Act 1974 (Part II)
1. The Merchant Shipping Act 1974 (Commencement No. 1) Order (1974 No. 1792)
2. The Merchant Shipping Act 1974 (Commencement No. 2) Order (1975 No. 866)

III. Pollution from Dumping at Sea: The Dumping at Sea Act 1974

A. The Dumping at Sea Act 1974 (Isle of Man) Order (1975 No. 810)

B. The Dumping at Sea Act 1974 (Guernsey) Order (1975 No. 811)

APPENDIX II

U.K. LAW OF LIABILITY FOR MARINE POLLUTION

I. Merchant Shipping (Oil Pollution) Act 1971
   A. The Merchant Shipping (Oil Pollution) Act 1971 (Commencement) Order (1971 No. 1423)
   B. The Merchant Shipping (Oil Pollution) Act 1971 (Commencement No. 2) Order (1975 No. 867)
   C. The Oil Pollution (Compulsory Insurance) Regulations (1977 No. 85)

II. Merchant Shipping Act 1974 (Part I)
   A. The Merchant Shipping Act 1974 (Commencement No. 1) Order (1974 No. 1792)
   B. The Merchant Shipping Act 1974 (Commencement No. 2) Order (1975 No. 866)

APPENDIX III

NORWEGIAN LAW REGULATING POLLUTION FROM SEABED OPERATIONS

I. Pollution from Seabed Operations
   - A. Royal Decree of 31st May, 1963
   - B. Act No. 12 of 21st June, 1963 relating to Exploration for and Exploitation of Submarine Natural Resources
     1. Royal Decree of 3rd October 1975, Relating to Safe Practices etc. in Exploration and Drilling for Submarine Petroleum Resources (as amended)
        - a) Regulations for drilling for petroleum, issued by the Norwegian Petroleum Directorate 29 August 1975
        - b) Regulations for Mobile Drilling Platforms with Installations and Equipment used for Drilling for Petroleum in Norwegian Internal Waters, in Norwegian Territorial Waters and in that Part of the Continental Shelf which is under Norwegian Sovereignty, issued by the Maritime Directorate 10 September 1973 (as amended)
   - C. Act Relating to Public Control of the Seaworthiness of Ships of 9 June 1903 (as amended)
     1. Regulations for Construction and Operation of Mobile Drilling Platforms with Installation and Equipment which are Registered or which are to be Registered in the Norwegian Register of Ship, issued by the Maritime Directorate on 5 May 1975
     2. Regulations for Manning of Norwegian Mobile Drilling Platforms with Installations and Equipment used for Drilling for Submarine Petroleum Resources issued by the Norwegian Maritime Directorate 28 February 1975

II. Pollution from Tankers and Support Vessels
   - A. Act Concerning Protective Measures Against Damage from Oil Pollution of 6 March 1970
     1. Regulations Concerning Prohibition Against Discharge of Oil into the Sea from Ships etc., issued by the Maritime Directorate, 27 April 1967
   - B. Harbour Act, 1933 (Section 24)
   - C. Act on Measures Pursuant to the International Convention of November 29, 1969 on Intervention on the Free Seas in Case of Oil Pollution Accidents, 16 June 1972, No. 46
     1. Temporary Regulations on Intervention on the High Seas in Case of Oil Pollution or Danger of Oil Pollution as a Consequence of a Marine Casualty, of 2 May 1975
   - D. Act of 17 December 1976 Relating to the Economic Zone of Norway

III. Pollution from Dumping at Sea
   - A. Water Pollution Act, 26 June 1970

1. Regulations on dumping of substances which may have harmful effects on marine life and human health

B. Fishing Act, 17 June 1955 (Section 20)

APPENDIX IV

NORWEGIAN LAW OF LIABILITY FOR MARINE POLLUTION

I. Act of 20 July 1893, No. 1, Sections 267-284 (The Marine Code)
   A. Provisional Regulations Concerning Insurance and Other Financial Security Against Liability for Oil Pollution Damage and Regarding Certificate
II. Act of 9 April 1976, No. 21, on enforcement in Norwegian Law of Environment Protection Convention between Norway, Denmark, Finland and Sweden, signed on February 19, 1974
III. Draft of Chapter 6 of the Norwegian general law of civil liability (unpublished)

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